

WEB'log

LIGHT+ 20 | BASIC 100 | PRO unlimited



Operating manual

Version 20140624

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All information in these operating instructions has been compiled and checked with the greatest care and diligence. Nevertheless, the possibility of errors cannot be entirely excluded. meteocontrol GmbH therefore cannot accept any liability for errors or any circumstances resulting from errors.

Subject to technical alterations.

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1 Notes on using the Operating Instructions

These Operating Instructions are intended for end customers and provide the basis for safe operation of the WEB'logs.

The personnel responsible for installation, operation and maintenance must have read and understood this operating manual

The instructions are continually updated.

The most current version of the Operating instructions can be found on our Internet site. www.meteocontrol.de

meteocontrol GmbH accepts no liability for personal injury, damage to property, or system malfunctions and their consequences, insofar as these result from non-observance of these Operating Instructions.

2 Safety instructions for operation

- The memory card (Compact Flash) must not be removed while the WEB'log is in operation.
- The WEB'log may not be opened
- No modifications may be made to the WEB'log
- Damaged devices must be taken out of operation immediately and checked by a qualified electrician
- Local regulations must be observed when using WEB'log
- The safety of the WEB'log and the user cannot be guaranteed if the safety precautions described are violated

3 Device overview

3.1 Device versions overview

	WEB'log Light+ 20	WEB'log Basic 100	WEB'log PRO Unlimited
Max. feed-in power in kW	20	100	Unlimited
Modem	GPRS or PSTN (analogue)		GPRS, PSTN (analogue) or ISDN
Display	2x16 characters		192x32 dots
Grid feed-in management (meteocontrol PowerControl) (supported processes in Appendix Chapter 8.2, grid feed-in management overview)	simplified grid feed-in management - active power P(DI)internal* - fixed reactive power		complete grid feed-in management
Modbus auxiliary equipment (energy meter, sensors)	Possible Modbus TCP and Modbus RTU		

* Internal digital inputs of the WEB'log are used for P(DI)internal.

Note: You can find more information on grid feed-in management on the meteocontrol Internet site.

3.2 Front WEB'log PRO Unlimited

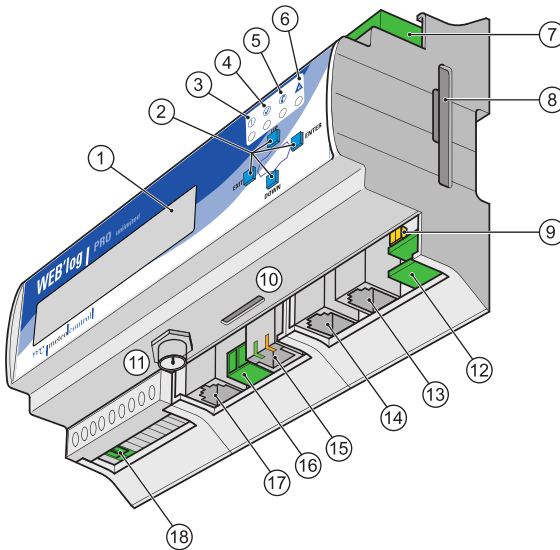


Fig. 1: Device overview front WEB'log PRO unlimited

- | | |
|-------------------------------------------|--------------------------------------------|
| (1) Display | (10) SIM card slot (only for WEB'log GPRS) |
| (2) Buttons [Exit], [Down], [Up], [Enter] | (11) Antenna socket (GPRS) |
| (3) Power LED | (12) Digital output |
| (4) Status LED | (13) RS232 / RS422* |
| (5) Modem LED | (14) RS485 |
| (6) Alarm LED | (15) Ethernet |
| (7) Analogue or digital input | (16) 24 V input/output |
| (8) Memory card (Compact Flash) | (17) Telephone socket (PSTN, ISDN) |
| (9) Changeover switch RS232 / RS422 | (18) Power supply WEB'log |

* Can also be used as RS485 for Modbus devices (see chapter 4.5.2)

Additional information on LEDs and buttons → Chapter 4, Assembly, Installation

3.3 Front WEB'log LIGHT+ 20 and WEB'log BASIC 100

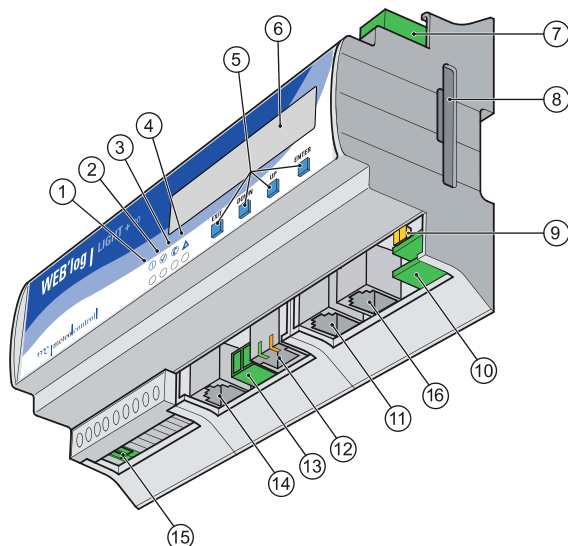


Fig. 2: Device overview front WEB'log LIGHT+ 20 WEB'log BASIC 100

- | | |
|----------------------------------------------|----------------------------------------|
| (1) Power LED | (9) Changeover switch
RS422 / RS232 |
| (2) Status LED | (10) Digital output |
| (3) Modem LED | (11) RS485 |
| (4) Alarm LED | (12) Ethernet |
| (5) Buttons [Exit], [Down], [Up],
[Enter] | (13) 24 V input/output |
| (6) Display | (14) Telephone socket (PSTN) |
| (7) Analogue or digital input | (15) Power supply WEB'log |
| (8) Memory card (Compact Flash) | (16) RS422 / RS232* |

* Can also be used as RS485 for Modbus devices (see chapter 4.5.2)

Additional information on LEDs and buttons → Chapter 4, Assembly, Installation

3.4 Back WEB'log LIGHT+ 20, BASIC 100 and PRO unlimited

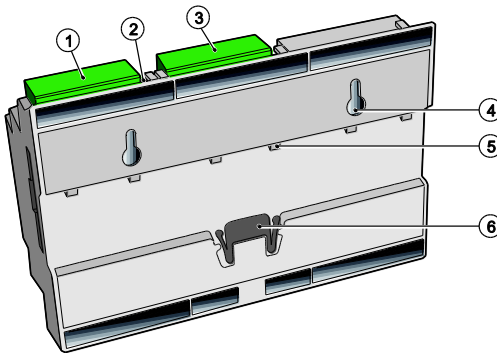


Fig. 3: Device overview back

- | | | | |
|-----|----------------|-----|-----------------------------------------|
| (1) | Digital input | (4) | Holder for wall installation |
| (2) | Reset button | (5) | Holder for installation on top-hat rail |
| (3) | Analogue input | (6) | Clamp |

3.5 Assignment of buttons and connections

Buttons







Button	Meaning
EXIT	Cancel input Back one menu level
UP	Select menu item above Increase selected number by 1
DOWN	Select menu item below Decrease selected number by 1
ENTER	One menu level further Confirm input Jump to the next number
RESET	Leads to restart of WEB'log

Direct access for setting language

- Briefly press UP and DOWN buttons simultaneously
- Then set the language in the menu

Note: Direct access is possible only once.

Assignment of connections WEB'log PRO unlimited, LIGHT+ 20 and BASIC 100

Pin						
	PSTN	ISDN*	RS485	RS422**	Ethernet	RS-Changeover switch
1	—	—	+24 V DC	—	TX+	RS422
2	—	—	RS485 A	TX+	TX-	RS232
3	a2 (out)	2a RX+	—	RX+	RX+	
4	a1 (in)	1a TX+	RS485 B	TX-	—	
5	b1 (in)	1b TX-	—	RX-	—	
6	b2 (out)	2b RX-	GND	GND	RX-	
7.8	—	—	—	—	—	

*ISDN only with Pro Unlimited

** Can also be used as RS485 for Modbus devices (see chapter 4.5.2)

3.6 Default settings

- Default setting for Ethernet connection: DHCP
- A manual network configuration is only necessary if no DHCP server is present.

IP address

Subnet mask

Gateway

192.168.30.40

255.255.255.0

0.0.0.0
- Default setting for modem connection:

IP address

Remote IP

Subnet mask
















192.168.200.1

192.168.200.51

255.255.255.255

	Direct portal communication	Transmission of alarm messages, daily data	Time synchronisation
Protocol	http	smtp (e-mail)	SNTP or TIME
Port	80, alternatively 8572	25	SNTP: 123 or TIME: 37
IP address	213.179.128.168 and 213.179.128.183	213.179.128.176	TIME: 132,163.4,102

3.7 Status LEDs

Symbol	LED	Meaning
		Green: WEB'log is powered
		Green: WEB'log is in the start phase
		Off: Power supply fault
		Green: System loaded successfully, normal operation
		Off: System booting, boot phase
		Yellow: Connection to network established
		Yellow: Connection set-up
		Off: No connection to PSTN, ISDN, GPRS network
		Red: Alarm signal at configured output DO1
		Red: Fault detected
		Off: Normal operation

The Alarm LED flashes in the following cases:

- System alarm, measured value alarm, status alarm
- Inverter alarm state detected
- Inverter Ini file missing
- Inverter or i'checker failure

4 Installation

4.1 Safety instructions for installation

Warning



Electric shock hazard! Danger to life and limb!

There is a risk of electric shock when connecting the device to the power supply. This can result in life-threatening injuries.

- De-energize the power cable and take measures to prevent it from being re-energized.

Note

Damage due to improperly connected cables!

If cables are improperly connected, this can damage or destroy the measuring inputs and the device.

- Connect cables only to the correct locations.
- Ensure the correct polarity of the cables being connected.

Note

Damage due to overvoltage!

Overvoltage or voltage peaks can damage or destroy the device.

- Protect the power supply against overvoltage.

Note

Damage due to overvoltage!

If voltages of more than 10 V DC are applied to the analogue inputs, or if currents of more than 20 mA flow, this can destroy the affected measuring inputs.

- Ensure that only voltages of up to 10 V DC are applied and only currents of up to 20 mA flow.

Note

Damage due to overvoltage!

If voltages of more than 24 V DC are applied to the digital inputs, this can destroy the affected measuring inputs.

- Ensure that only voltages of up to 24 V DC are applied.

Note

Damage due to voltage input!

If the 110 ... 230 V power supply and 24 V voltage input are connected at the same time, this will damage the device.

- Ensure that **either** the 110 ... 230 V power supply **or** the 24 V voltage input is used.

4.2 Cables and wiring

Cable types

- Bus cabling (inverters, current sensors)
RS485, RS422 data cable,
twisted and shielded: Li2YCYv (TP) 2x2x0,5mm² ¹⁾
Network cable: CAT 6
- Sensors (irradiance sensor, temperature sensor)
Sensor cable: LiYCY 2x2x0.5mm²
- Meter (energy meter)
Telephone cable: J-Y(ST)Y 2x0.6mm²
- Ethernet network
Network cable: CAT 5e / CAT 6

Maximum permissible cable lengths:

- Bus cabling (data cable RS485) 1200m ^{2) 3)}
- Sensor (voltage signal 0V – 10V) 100m
- Sensor (current signal 4mA – 20mA) 600m⁴⁾
- Meter 10m
- Ethernet network 100m ³⁾

¹⁾ We recommend using the cable type UNITRONIC® Li2YCYv (TP) manufactured by Lapp Kabel, or an equivalent cable type. This cable is suitable for laying in soil.

²⁾ For longer cable lengths, repeaters must be used.

³⁾ Several, separate cables of this length require a Hub.

⁴⁾ Power supply of 24 V DC is required.

Note: Data cables must be separated of current cables according to EN 50174-2 using metallic cable carrier.

Terminals

meteocontrol recommends using terminal blocks to cable the devices.

If a terminal block is used, the Connect cable can be cut off and used to connect the WEB'log to the terminal block.

Shielding

The cable shielding must be grounded at one end of the connection only.

4.3 Installation

- Mount the WEB'log on a top-hat rail; alternatively, the device can be mounted on a wall.

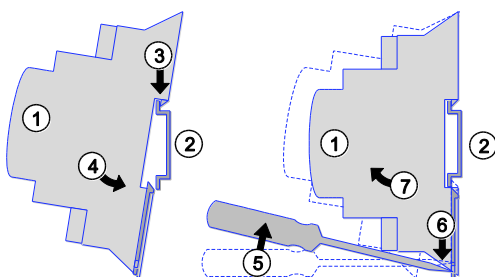


Fig. 4: Installation on a top-hat rail

- | | |
|--------------------------------|-------------------------|
| (1) WEB'log | (5) Screwdriver |
| (2) Top-hat rail | (6) Releasing the clamp |
| (3) Upper edge of top-hat rail | (7) Removing the device |
| (4) Pressing on the device | |

4.4 Interfaces

PSTN and ISDN connection

1. Test the PSTN telephone connection for outgoing and incoming calls (e.g. provider number; if necessary, include external dial prefix and ensure there are no dialing restrictions). Set the telephone system as described in the manufacturer's instructions.
2. Test the ISDN telephone connection with an S_0 tester before installation. Set the telephone system as described in the manufacturer's instructions.
3. For PSTN or ISDN, connect the device and the telephone connection with the supplied cable. If the cable needs to be extended, ensure secure contact and correct polarity.
4. For a GSM/GPRS modem, connect the supplied mobile radio antenna to the antenna socket.
5. The GSM/GPRS data card must be set to the same PIN number as the WEB'log. To do this, set the PIN number of the data card using a cell phone. Insert the GSM/GPRS data card into the WEB'log until you feel it click into place.

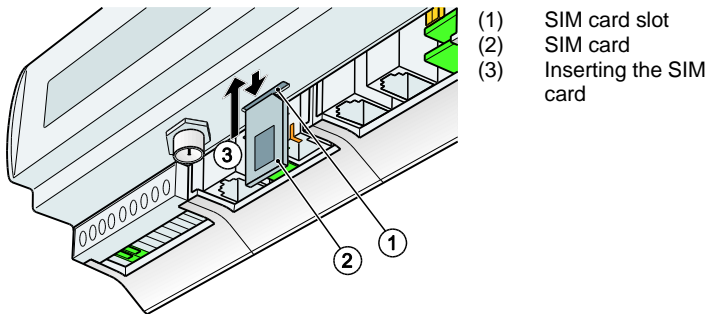


Fig. 5: Inserting the SIM card

Note: The SIM card must be inserted and removed only when the device is switched off.

Ethernet connection

- Direct connection from WEB'log and PC / laptop via crossed network cable (crossover). DSL versions of the device include the cable with delivery contents.

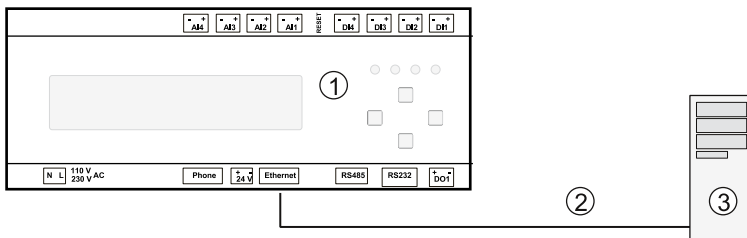


Fig. 6: Crossed network cable

- (1) WEB'log (3) Computer / laptop
(2) Crossed network cable

- Connection to a hub / switch via an uncrossed network cable.

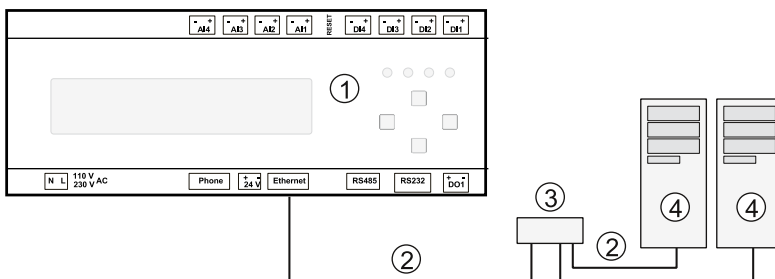


Fig. 7: Uncrossed network cable

- (1) WEB'log (3) Hub / switch
(2) Uncrossed network cable (4) Computer / laptop

Note: Hub / switch and network cable are not included with delivery contents.

4.4.1 Analogue input

The analogue inputs can be configured as:

- Voltage input (DC): 0...10 V
- Current input 0...20 mA
- Resistance measurement input for a PT1000 two-wire measurement

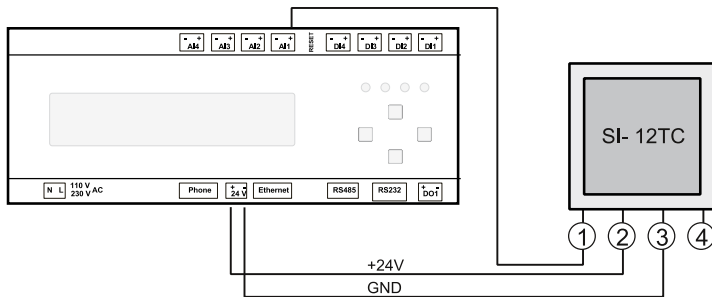


Fig. 8: Irradiance Sensor SI-12TC example

- | | |
|-------------------------|---------------|
| (1) Irradiance (orange) | (3) GND |
| (2) + 24 V DC (red) | (4) PE shield |

4.4.2 Digital input

Digital inputs are pulse inputs according to DIN 43864 (S0); they are configured as:

- Meter input
- Status input
- Power Control (see Chapter 5.7)

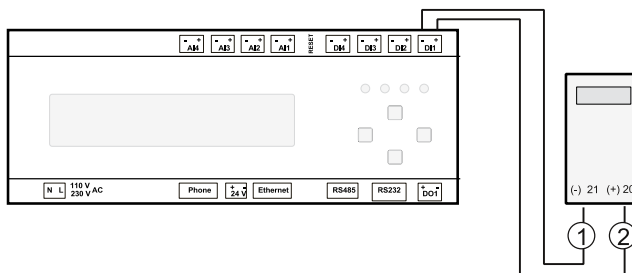


Fig. 9: Energy meter example

- | | |
|------------------------------|-----------------------------|
| (1) S0 interface, minus (21) | (2) S0 interface, plus (20) |
|------------------------------|-----------------------------|

Note: For further information about configuration, see Appendix.

4.4.3 Power supply

Protect the power supply (230 V AC) with a fuse (e.g. B6A), or alternatively use the voltage input (24 V DC).

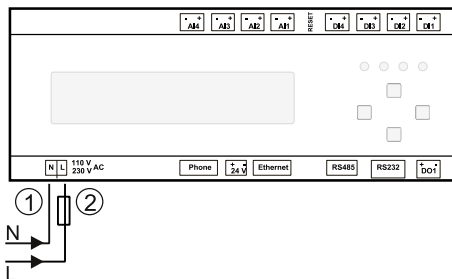


Fig. 10: 230 V power supply

(1) Neutral conductor

(2) Phase with 6 A fuse

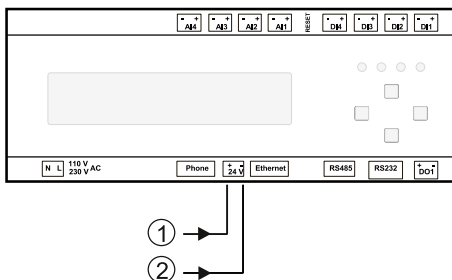


Fig. 11: 24 V voltage input/output

(1) 24 V DC

(2) GND

Note: The integrated power supply can provide sensors (e.g. i'checker) maximum current consumption of 100mA. Power is supplied through the RS485 in which +24V and GND are available. For sensor current consumption totalling more than 100mA, please use an external power supply.

4.5 Communication with inverters

In order for the WEB'log to communicate with the inverter, the data logger must be equipped with the appropriate inverter driver.

Note: The required driver is installed by the manufacturer before shipment.

This section lists only the information necessary for connecting inverters and current sensors. Additional information is available in the [Inverter / current sensor documents](#).

Please note:

- Observe the maximum permissible number of bus devices
- WEB'log and connect the first bus device with the data cable or connect cable.
- The order of the bus devices on the bus is unimportant
- The use of a repeater is necessary for every 32nd bus device and for long cable lengths
- As a rule, no operating voltage may be connected to the communication interfaces of inverters
- The i'checker requires a power supply of 24 V DC
- The shield of the bus cable must be grounded at one end of the connection only. The data logger does not have its own grounding
- When routing the bus cabling, ensure as great a distance as possible from AC cables
- To prevent reflections, the bus must always be terminated with a parallel terminator

“Connect cable” option

meteocontrol offers a pre-assembled data cable (Connect cable) for connecting the WEB'log and the first bus device (inverter or current sensor). Please select the connect cable according to the inverter type or use the meteocontrol Connect Universal RS cable.

4.5.1 WEB'log RS485 connection

This interface serves as the default connection between the WEB'log and inverter. Connection information for the relevant inverter type can be found in Appendix Chapter 8.1. If the inverter type is not listed in the Appendix, the general connection diagram illustrated below must be used. Please also observe the additional information included with the inverter manufacturer documentation!

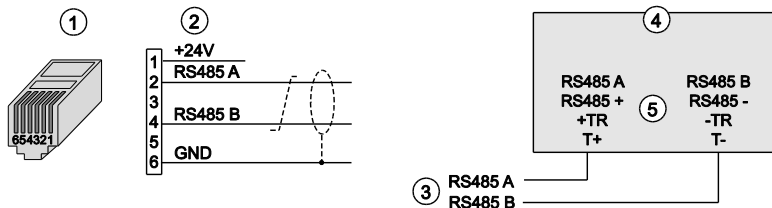


Fig. 12: General connection diagram RS485

- | | |
|-------------------------------------|-------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (3) Bus cable to the WEB'log |
| (2) Signal names | (4) Inverter |
| | (5) Possible connection names |

- Signal wires RS485 A and RS485 B must not be interchanged
- A twisted and shielded wire pair must be used for the bus cable
- Terminate RS485 bus after the last bus device (using resistor, switch, jumper ... depending on type)

Note: This interface is not to be used to connect auxiliary Modbus devices! Please use the interface RS232/RS422 as described in 4.5.2 .

4.5.2 Connecting Modbus devices

Not all inverters operated via the RS485 interface of the WEB'log use the Modbus communication protocol. Simultaneous operation of a Modbus device at the RS485 interface is thereby not possible.

In these instances, the WEB'log allows Modbus devices to be operated via the second serial interface RS232/RS422. The interface needs to be configured accordingly with RS422 operation:

1. Turn off WEB'log power supply.
 2. For switching to the RS422 move the right switch on the WEB'log (behind DO1 connection) to Position 1 (looking at the connection from the front: to the left).
 3. Convert the serial cable according to the Pin assignment (see Fig. 13) or use meteocontrol Connect Universal RS (already includes modifications).
 4. Connect the serial cable to the RS485 terminals of the auxiliary device and to the RS232/RS422 socket of the WEB'log.
- 🔗 Auxiliary device is connected to the WEB'log via RS485.



RJ12 socket			changeover switch
			
Pin assignment	RS422	RS485	RS changeover switch
1	----	+ 24 V	RS422
2	TX+	A	RS232
3	RX+	Pin 2 bridge	
4	TX-	B	
5	RX-	Pin 4 bridge	
6	GND	GND	

Fig. 13: Pin assignment

4.5.3 i'catcher

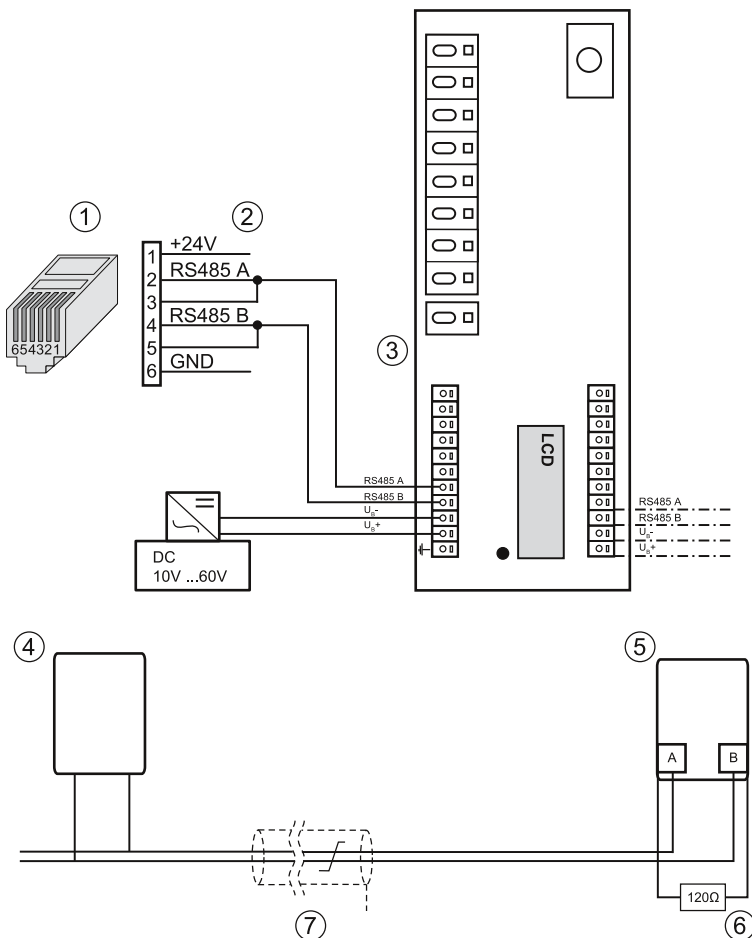


Fig. 14: i'catcher connection with Connect Universal, terminal connection

- | | |
|----------------------------------------------|--------------------------------|
| (1) RJ12 connector (WEB'log),
RS485/RS422 | (5) Last i'catcher |
| (2) Connect Universal RS assignment | (6) Terminating resistor 120 Ω |
| (3) Terminals (i'catcher) | (7) Bus cable |
| (4) First i'catcher | |

Note: If a Modbus driver is used, the i'catcher must be connected via the first serial interface RS485. With proprietary drivers the connection via the second serial interface RS232/RS422 is provided.

4.5.4 i'checker Advanced current sensor

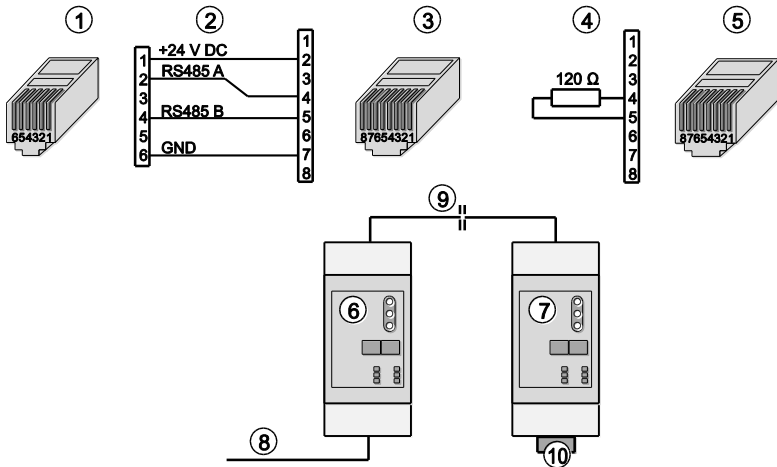


Fig. 15: i'checker Advanced with Connect i'checker

- | | |
|-------------------------------------|------------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) First and subsequent current sensors |
| (2) PIN / PIN assignment | (7) Last current sensor |
| (3) RJ45 connector (i'checker) | (8) Connect i'checker |
| (4) Pin assignment, terminator | (9) CAT 5 patch cable |
| (5) RJ45 terminator | (10) 120 ohm terminator |

- Maximum of 100 i'checkers per WEB'log
- If more than 3 Advanced i'checkers are connected, an external power supply of 24 V DC is required
- On the last current sensor, the data bus must be terminated with a terminating resistor of 120 ohm between RS485 A and RS485 B

4.5.5 RS485 hub

The 6-way RS485 hub enables configuration of a star network.

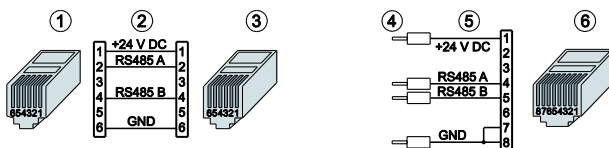


Fig. 16: i'checker connection diagram

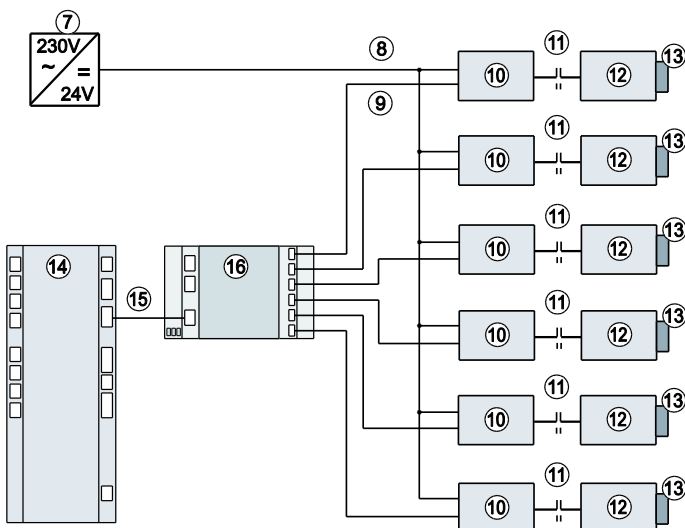


Fig. 17: 6-way RS485 hub

- | | |
|---------------------------------------------------------------------|---------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (9) Data cables 6 x RS485 bus |
| (2) Pin assignment, bus cable | (10) First and subsequent bus devices |
| (3) RJ12 connector (hub) | (11) CAT6 patch cable |
| (4) Data cable from hub to bus device, power supply from power unit | (12) Last bus device |
| (5) Assignment of connection set-up to i'checker | (13) 120 ohm bus terminator |
| (6) RJ45 connector at i'checker | (14) WEB'log |
| (7) External power unit | (15) Bus cable |
| (8) Power supply 6 x RS485 bus | (16) 6-way RS485 hub |

Note: The bus termination is pre-integrated in the WEB'log and in the RS485 hub (input/output).

5 Start-up, configuration

5.1 Preconditions

- WEB'log is installed
- All cable connections are correctly connected

5.2 WEB'log start-up

- Switch on the power supply
- Wait until the WEB'log has completed the startup phase (Power LED is on and Status LED blinks)

5.3 Check the connections

Check the telephone connection

PSTN: Dialling tone, dial test number, e.g. "0192658" with PSTN telephone.

ISDN:

ISDN: Check with S₀ tester and ISDN telephone.

Set MSN via the WEB'log display. Configuring of the WEB'log.

5.4 Configuring the WEB'log using a Web browser

There are two ways of configuring the data logger using a Web browser. The installation wizard takes users through the key device configurations, while the expert pages enable all settings. For special applications, such as configuring Modbus devices, the expert pages must be used for configuration.

5.4.1 Installation assistant – guided configuration via web browser

- Connect the computer to the WEB'log via Ethernet
- Address the home page of the WEB'log in the web browser
- Mode: Select "Installation wizard"
- Perform guided configuration
- Send a test message (e-mail, fax)

5.4.2 Expert pages – Professional configuration via web browser

- Connect the computer to the WEB'log via Ethernet
- Address the home page of the WEB'log in the web browser
- Mode: Select "Professional mode"
- Login to the admin area via the menu General > Login. The default password is: "ist02"
- Carry out configuration via menu pages
- Send a test message (e-mail, fax)

5.5 Configuring the WEB'log via the display

If there is no PC available when configuring the WEB'log, key settings for the system's basic functions can also be made via the display in the menu "Settings".

These include:

- Setting the language in the submenu Language
- Scan for bus devices using the submenu data logger - inverter scan, current sensor scan and Modbus scan
- Select predefined setting for analogue and digital inputs (only with PRO Unlimited)
- Setting the communication connection to the local network and Internet connection via the menu Communication - Ethernet or Modem/ISDN/GPRS
- Activation and testing of connection to the Web portal via Communication - Communi. HTTP

For special applications, such as configuring Modbus devices, the expert pages must be used for configuration.

5.6 Configuring the WEB'log for the connection of Modbus devices

5.6.1 Using the correct Modbus interface

- Devices that communicate via Modbus TCP are connected at the Ethernet interface
- Devices that communicate via Modbus RTU are connected at either the RS485 or RS422 interface, depending on the inverter used. Important information regarding the interface to be used is available on our Internet page www.meteocontrol.com in the section Downloads > Industrial Line > Driver data sheets WEB'log
- When using Modbus at the RS422 interface, it is to be operated as a RS485 interface. For more information, see Chapter 4.5.2.

5.6.2 Configuring the Modbus interface via the Web browser

- Login to the admin area of the expert pages via the menu *General > Login*
- In the menu, select *Admin measurement > Modbus devices > General configuration*
- In the list, select the type of device connected and confirm your selection with "Save".
 - If the device is not listed, the "Read" function can be used to reload the device type list currently available on the WEB'log.
 - In addition, for Modbus RTU devices, the communication settings of the serial interface also need to be configured, and the selection confirmed with "Save".
- In the menu, select *Admin measurement > Modbus devices > Device configuration*
 - The addresses of the connected Modbus devices are assigned to the device types on this page (multiple assignments are possible)
 - Modbus RTU provides the option to automatically scan the bus according to address; the desired address area must be entered for this
- To check the measured values received, the Modbus device overview must be accessed via the menu *Online values > Modbus devices*

5.7 Configuring the WEB'log for Power Control

The necessity of active participation of PV system operators in the grid safety management increases with the rising share in the overall power production. This requires an option to reduce the feed-in power and participation in the compensation of the reactive power in the grid. Power control procedures provide a number of options for implementing these requirements.

In the following, power control procedures are outlined that can only be performed with WEB'log and ripple control receivers. An overview of all possible procedures is available in Chapter 8.2.

A detailed description of the procedures and how the configuration is to be performed can be found on our Internet page www.meteocontrol.com.

5.7.1 Active power control (P(DI) internal)

With all data loggers, it is possible to carry out a reduction in active power for PV systems. The manipulated variables specified by the relevant energy supplier are transmitted to the WEB'logs using the ripple control receiver.

Connecting the ripple control receiver to the digital interfaces

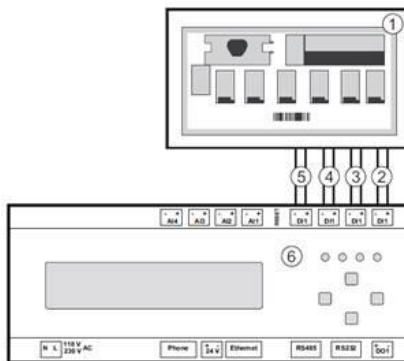


Fig. 18 Ripple control receiver connection to WEB'log

- | | |
|--------------------------------------|-------------------------------------|
| (1) Ripple control receiver | (4) Digital input DI3 (Default 30%) |
| (2) Digital input DI1 (Default 100%) | (5) Digital input DI4 (Default 0%) |
| (3) Digital input DI2 (Default 60%) | |

Configuring the active power control via the Web browser

- Login to the admin area of the expert pages via the menu *General > Login*.
- In the menu, select *Admin measurement > Power Control > General configuration*
- Select active power procedure "P(DI) intern" and configure the digital inputs according to their active power level
- "Data logger mode" can be used to specify whether the device should send the information received from the ripple control receiver to additional WEB'logs in the network
- In the section "Control values in fallback mode", the valid active power control value for a communication disruption to the ripple control receiver can be set.
- Power control is activated by checking the box "Power Control Active" and confirming with "Save"

Note: The Power Control can be set to active or inactive on the display. Other Power Control configurations can only be made via the Web pages of the WEB'log.

5.7.2 Reactive Power Control $\cos \varphi$ (Fix) and Q (Fix)

All WEB'logs also enable the setting of fixed reactive power values for PV systems. A power quality analyser and related accessories are required to carry out reactive power control at a grid connection point.

The following configuration steps must be performed to set fixed reactive power values

- Login to the admin area of the expert pages via the menu *General > Login*
- In the menu, select *Admin measurement > Power Control > General configuration*
- Select reactive power procedures " $\cos \varphi$ (Fix)" and "Q (Fix)" and enter the fixed reactive power value specified by the energy supplier
- "Data logger mode" can be used to specify whether the device should send the information received from the ripple control receiver to additional WEB'logs in the network
- Power control is activated by checking the box "Power Control Active" and confirming with "Save"

5.7.3 WEB'log Master and Slave

In large systems with multiple data loggers, Power Control can be managed by a WEB'log master. The control values are determined by the master and transmitted to the WEB'log slaves. They then forward the control values to the inverters.

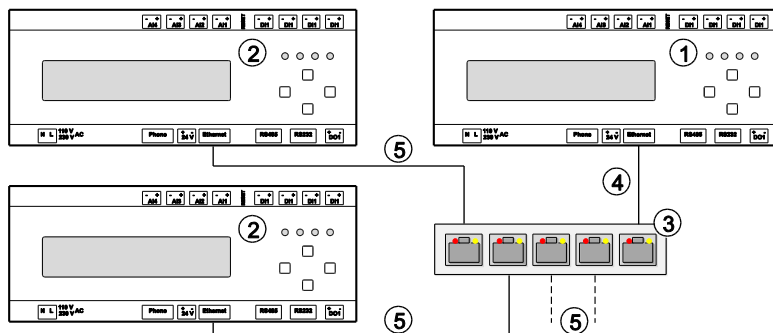


Fig. 19: Master-slave connection

- | | |
|---------------------|----------------------------------------------------|
| (1) WEB'log-Master | (4) WEB'log-Master connection with Ethernet switch |
| (2) WEB'log-Slave | (5) WEB'log-Slave connection with Ethernet switch |
| (3) Ethernet switch | |

- All WEB'log devices must be in the same network (subnet mask).
- Every WEB'log must be assigned its own IP address.
- A maximum of two WEB'log devices may be directly connected via a cross cable.
- For more than two WEB'log devices, an Ethernet switch is required.

Defining the WEB'log as Master or Slave

Master and slave configurations are set on the WEB'log Web pages. To do this, the computer must be connection with the WEB'log via Ethernet.

The following steps are required for the configuration via Web browser:

- Login to the admin area of the expert pages via the menu General > Login.
- In the menu, select Admin measurement > Power Control > General configuration
- Select data logger mode

Note: The data logger activated as the master sends information on active and reactive power values to slaves. Active and reactive power procedures can be set and configured on the master only.

Note: If the Master is a WEB'log Pro Unlimited, also WEB'log Light + 20 and Basic 100 can be used as slaves for all power control procedures.

The following list illustrates the options for Master and Slave settings:

- Slave (general broadcast messages)
Receives control value information from the master about the general broadcast
- Slave (Einzelmeldungen) [Slave (single messages)]
Receives control value information from the master via single message
- Slave (Gruppen-Broadcast) [Slave (group broadcast)]
Receives control value information from the master via group broadcast
- Master (keine) [Master (none)]
Transfers no control value information to slaves
- Master (an alle Slaves) [Master (to all slaves)]
Transfers control value information as a broadcast to all slaves available
- Master (Slavegruppe) [Master (slave group)]
Transfers control value information as a broadcast to all slave groups

5.8 saferSun configuration via the web portal

- If required, fill out the registration form and send it off (fax, e-mail)

This is followed by:

- Set-up and configuration by portal administrator using the registration form
- Transmission of the configuration from the web portal to the data logger
- Sending of your access data to the web portal

6 Operation

The WEB'log display offers the following options:

- Polling current measured values and retrieving stored energy yield values
- Retrieving and changing communication settings
- Functions depending on specific user groups

Note: The WEB'log's user groups are password protected.
The standard passwords are:

User group "End customer" password "0030"
User group "Installer" password "0020"
User group "Administrator" password "0010"

Menu structure on the LIGHT+ 20 and WEB'log BASIC 100 display

Overview*	Current network settings
└ Ethernet	
└└ Curr. IP Add.	
└└ Curr. Subnet	
└└ Curr. Gateway	
Settings**	
└ Communication	
└└ Ethernet	
└└└ DHCP	DHCP server on/off
└└└ Stat. IP Add.	Fixed IP address, no DHCP
└└└ Subnet mask	Fixed subnet mask, no DHCP
└└└ Gateway	Gateway address, no DHCP
└└ Modem/ISDN/GSM	
└└└ Local IP Addr.	IP address of device in WAN
└└└ Remote IP Addr.	IP address of caller in WAN
└└└ Subnet mask	Subnet mask in WAN
└└ Comm. HTTP	
└└└ Comm. Activate	
└└└ Connection test	
└└└ Test start	
└ Language	Display language
└└ German	
└└ ...	
└ Data logger	
└└ Inverter settings* ³	Search inverters
└└└ Scanning process	
└└ Curr. se. scan.	Search current sensors
└└└ Scanning process	
└└ Modbus settgs.	Search Modbus devices
└└└ Scanning process	
└└ Factory settgs. Set ***	
└ PC settings	Power Control settings

<ul style="list-style-type: none"> └ Switch output <ul style="list-style-type: none"> └ Switch man. └ Switch autom. └ Switch └ Switching rule 	<p>Manually switch</p> <p>Enable / disable switching rule</p> <p>State of the switch</p> <p>State of the switching rule</p>
Current values*	
<ul style="list-style-type: none"> └ Analogue Values <ul style="list-style-type: none"> └ AI 1 └ ... └ Digital values <ul style="list-style-type: none"> └ DI 1 └ ... └ Current sensors^{*2} <ul style="list-style-type: none"> └ IS 1 └ ... └ Inverter^{*3} <ul style="list-style-type: none"> └ WR 1 └ ... 	<p>Show analogue measured values</p> <p>Show digital measured values</p> <p>Show measured values from current</p> <p>Show measured values from inverters</p>
System*	
<ul style="list-style-type: none"> └ Inverter energy^{*3} <ul style="list-style-type: none"> └ Current Power └ Daily Energy └ Energy (ye.day) └ Energy (month) └ Energy (year) └ Energy (total) └ Alarms / Errors^{**} └ Communication 	<p>Display of system power</p> <p>Show alarms and errors</p>
* User group "End customer"	^{*3} Only for inverters
** User group "Installer"	^{*4} ISDN and GSM / GPRS modem
*** User group "Administrator"	^{*5} Only with ISDN devices
^{*1} For devices with GSM / GPRS	^{*6} Only for PSTN devices
^{*2} Only for current sensors	

Note: Scanning processes are initiated with the "Enter" button.

GPRS device versions are to be configured with a PC.

Resetting to the factory settings affects the following functions:

- Deleting the MSN numbers (ISDN)
- GPRS pin reset to "4321"
- Activating the automatic call acceptance (PSTN)
- LAN on 192.168.30.40, 255.255.255.0
- WAN on 192.168.200.1, 255.255.255.255

Menu structure on PRO unlimited display

Overview*	Current network settings
└ Network	
└ Curr. IP address	
└ Curr. Subnet mask	
└ Curr. Gateway	
└ GSM / GPRS ¹	
└ Signal quality	
Current values*	
└ Analogue Values	Show analogue measured values
└ AI 1	
└ ...	
└ Digital values	Show digital measured values
└ DI 1	
└ ...	
└ Current sensors ²	Show measured values from current
└ IS 1	
└ ...	
└ Inverter ³	Show measured values from inverters
└ WR 1	
└ ...	
└ Energy DI / Inverter ³	Display of system power
└ Current Power	
└ Daily Energy	
└ Energy (ye.day)	
└ Energy (month)	
└ Energy (year)	
└ Energy (total)	
Settings**	
└ Data logger	
└ Network	
└ DHCP	DHCP server on/off
└ Stat. IP address	Fixed IP address, no DHCP
└ Subnet mask	Fixed subnet mask, no DHCP
└ Gateway	Gateway address, no DHCP
└ Modem/ISDN/GSM	
└ Call acceptance ⁶	Call acceptance on/off
└ Local IP Addr.	IP address of device in WAN
└ Remote IP Addr.	IP address of caller in WAN
└ Subnet mask	Subnet mask in WAN
└ ISDN MSN ⁵	MSN settings
└ PIN code ¹	GPRS PIN settings
└ Portal communication http	
└ Enable communication	
└ Connection test	
└ AI configuration	
└ AI 1	
└ ...	

DI configuration	
DI 1	
...	
Language	Display language
German	
...	
Set date	
Set time	
Display	
Contrast	
Brightness	
Reset	Restart
Switch output	
Switch man.	Manually switch
Switch autom.	Enable / disable switching rule
Switch	State of the switch
Switching rule	State of the switching rule
System	
Inverter scan ^{*3}	Search inverters
Scan current sensors ^{*2}	Search current sensors
Scan Modbus	
Set protocol	
RTU	
ASCII	
Set baud rate	
Data bits / Parity	
Scan range: Lower limit	
Scan range: Upper limit	
Scan Modbus	
Scanning process	
PC settings ^{***}	
Set factory defaults ^{***}	

* User group "End customer"

** User group "Installer"

*** User group "Administrator"

^{*1} For devices with GSM / GPRS

^{*2} Only for current sensors

^{*3} Only for inverters

^{*4} ISDN and GSM / GPRS modem

^{*5} Only with ISDN devices

^{*6} Only for PSTN devices

Note: Scanning processes are initiated with the "Enter" button.

Resetting to the factory settings affects the following functions:

- Deleting MSN numbers (ISDN)
- GPRS pin reset to "4321"
- Activating automatic call acceptance (PSTN)
- LAN on 192.168.30.40, 255.255.255.0
- WAN on 192.168.200.1, 255.255.255.255

7 Troubleshooting

Fault	Solution
No display Power LED does not light up	Check the power supply
Status LED does not flash	No memory card (Compact Flash) inserted No data on the inserted memory card
No IP address assigned to the device by the DHCP server	Check the network connection Start the WEB'log once a network connection has been established If there is no DHCP server in the network, use manual network settings
Internet connection via cable does not work	The Internet connection must be via a router. Direct connection to a cable modem is not possible
No inverter found	Inverters must be switched on for scanning Check the bus cabling. Suitable data cable used? Set the bus address in the inverter (manufacturer-specific) Check the terminating resistor to prevent signal reflections Connect the shield of the bus cabling Check the interfaces of the inverters
Energy meter not detected	Check the cabling (polarity) Check that the digital input is active Has the pulse constant been entered?
No data or alarms sent via the telephone connection	Check the function of the telephone connection using a telephone Check that the connection is not subject to dialling restrictions (e.g. premium-rate numbers) Establish a test connection to an Internet provider (e.g. MSN 0193670) If necessary, cancel any dialling restrictions, or use a different Internet provider

8 Appendix

8.1 Inverter connections

8.1.1 ABB central inverter (Modbus)

RETA 01 control panel

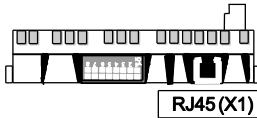


Fig. 20: RETA 01 control panel with ABB central inverter

Connection via Ethernet

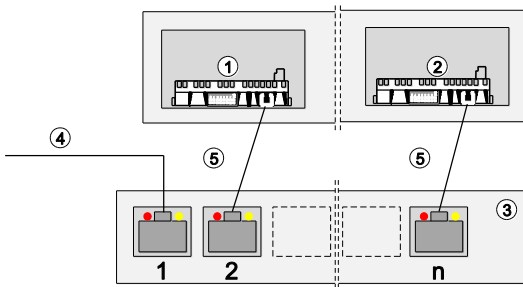


Fig. 21: Connection via Ethernet with ABB central inverter

- | | |
|------------------------------------|---------------------------------|
| (1) First and subsequent inverters | (4) Ethernet connection WEB'log |
| (2) Last inverter | (5) Ethernet patch cable |
| (3) Switch or router | |

- Communication via Ethernet
- The WEB'log and the inverter must be in the same subnet (net mask)

RMBA control panel

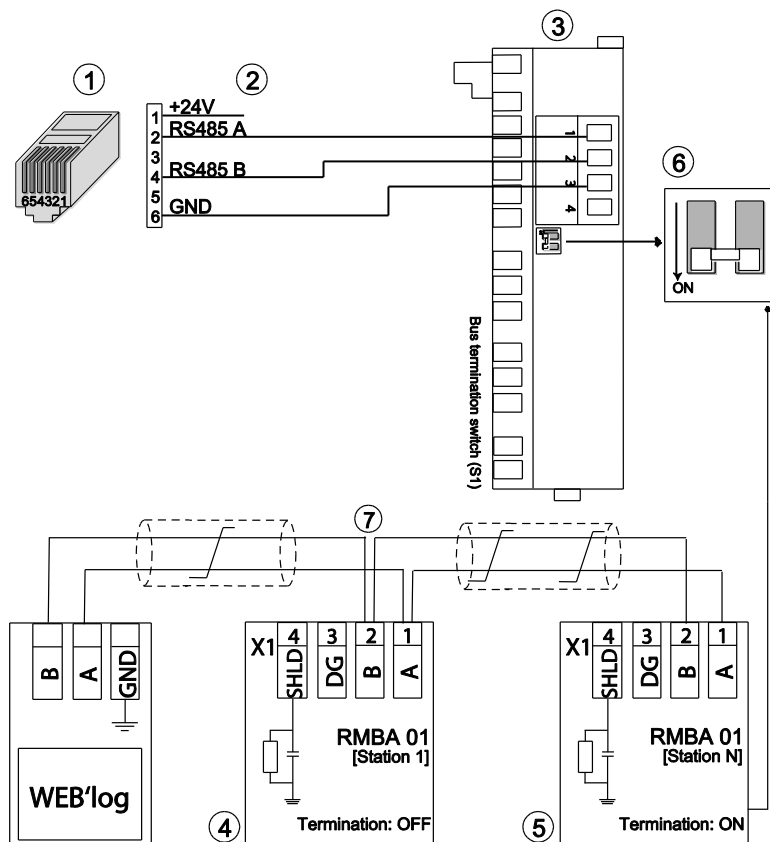


Fig. 22: RMBA control panel connection

- | | |
|-------------------------------------|-------------------------------------|
| (1) RJ12 connector | (5) Last inverter |
| (2) Connect Universal RS assignment | (6) DIP switch terminating resistor |
| (3) RMBA control panel (Modbus RTU) | (7) Bus cable |
| (4) First inverter | |

8.1.2 Advanced Energy AEI (Modbus)

Connection via Ethernet

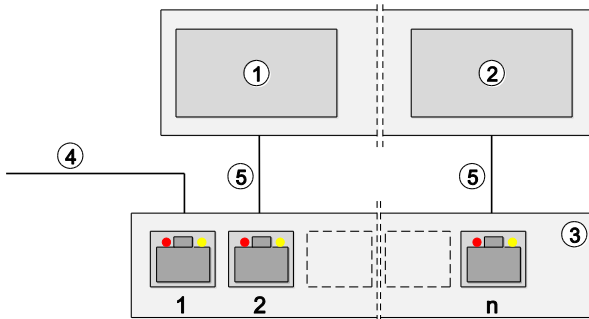


Fig. 23: Connection via Ethernet with Advanced Energy Inverter

- | | |
|------------------------------------|------------------------------------------|
| (1) First and subsequent inverters | (4) Ethernet connection WEB'log |
| (2) Last inverter | (5) Ethernet patch cable T-568B-Standard |
| (3) Switch or router | |

- Communication via Ethernet
- The WEB'log and the inverter must be in the same subnet (net mask)

8.1.3 Convertteam inverter (Modbus)

Connection via Ethernet

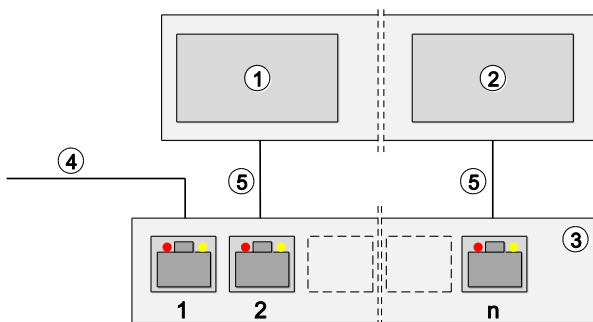


Fig. 24: Connection via Ethernet with Convertteam Inverter

- | | |
|------------------------------------|---------------------------------|
| (1) First and subsequent inverters | (4) Ethernet connection WEB'log |
| (2) Last inverter | (5) Ethernet patch cable |
| (3) Switch or router | |

- Communication via Ethernet
- The WEB'log and the inverter must be in the same subnet (net mask)

8.1.4 Danfoss inverter

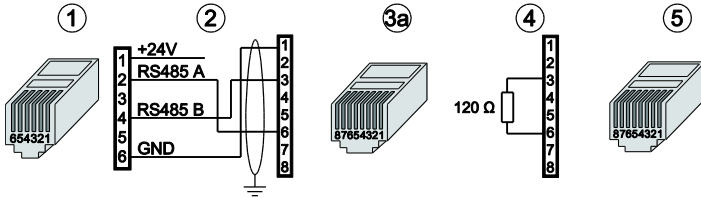


Fig. 25: Danfoss inverter with Connect Danfoss

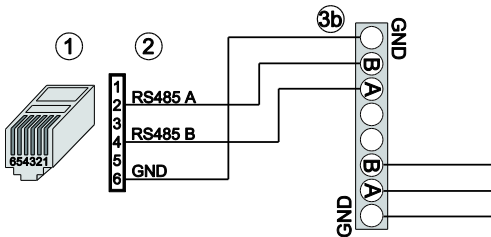


Fig. 26: Danfoss inverter with Connect RS

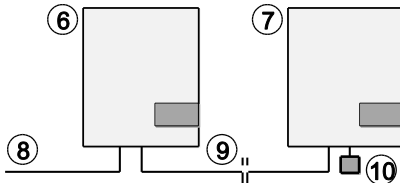


Fig. 27: Connection of additional inverters

- | | |
|-------------------------------------|------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) First and subsequent inverters |
| (2) PIN assignment (Connect cable) | (7) Last inverter |
| (3a) RJ45 connector (inverter) | (8) Connect Danfoss |
| (3b) Terminals (inverters) | (9) Ethernet patch cable |
| (4) Terminator assignment | (10) Terminator for last inverter |
| (5) RJ45 terminator | |

- Maximum of 31 inverters and 100 i'checkers per WEB'log
- Connect the cable shield to the ground terminal at the WEB'log end
- Set the inverter bus address (see inverter documentation)
- Terminate the RS485 bus after the last inverter with the terminator (10)

8.1.5 Delta inverter

String inverter (SI)

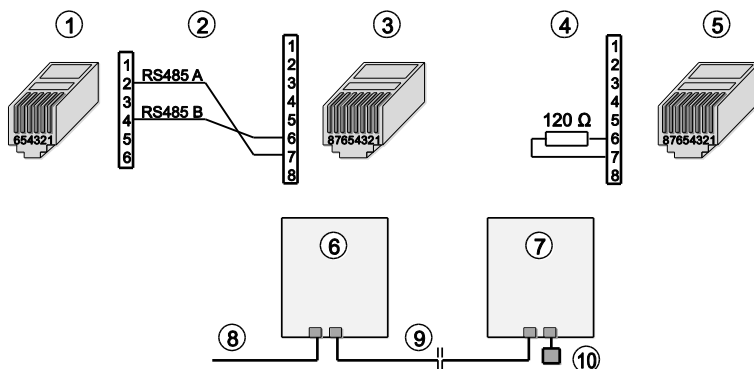


Fig. 28: Delta string inverter with Connect Delta

- | | |
|-------------------------------------|------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) First and subsequent inverters |
| (2) Pin assignment, Connect cable | (7) Last inverter |
| (3) RJ45 connector (inverter) | (8) Connect Delta |
| (4) Terminator assignment | (9) Ethernet patch cable |
| (5) RJ45 terminator | (10) Terminator for last inverter |

- Maximum of 31 inverters and 100 i'checkers per WEB'log
- Bus termination: Either connect terminator with 120 ohm to pin 6 and pin 7, or connect terminator with jumper between pins 5 and 6
- Terminate the RS485 bus after the last inverter with the terminator (10)

Central inverter CI

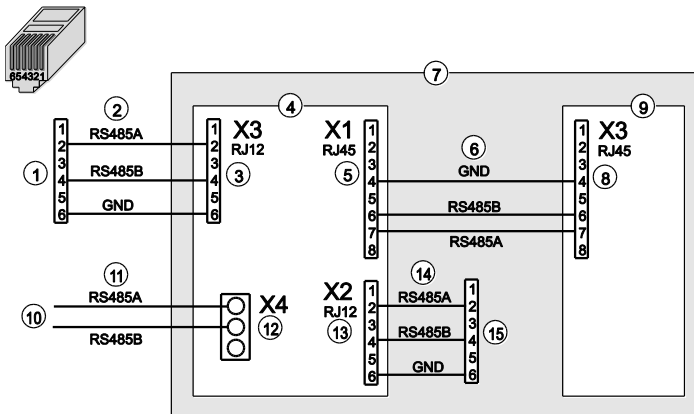


Fig. 29: Delta central inverter

- | | |
|---------------------------------|---------------------------------------------------------------------------------------------------------|
| (1) WEB'log | (9) System controller |
| (2) RJ12 patch cable | (10) Communication with i'checkers in string combiner boxes (optional, see manufacturer's instructions) |
| (3) X3 to the WEB'log | (11) Bus cable |
| (4) RS485 bus board | (12) X4 to the i'checkers (optional) |
| (5) X1 to the system controller | (13) X2 to the RS485 bus board (X3) of the next central inverter |
| (6) Ethernet patch cable | (14) RJ12 patch cable |
| (7) Inverter cabinet | (15) RS485 bus board (X3) of the next central inverter |
| (8) X3 to the RS485 bus board | |

The inverters are grouped together in inverter cabinets (7). Current sensors, i'checkers, can be installed in the string combiner boxes to record measured values.

- Maximum of 8 inverter cabinets and 9 string combiner boxes or 100 i'checkers per WEB'log
- The WEB'log is installed in the first inverter cabinet
- To supply power to the WEB'log and i'checkers (optional), a 24 V DC power supply with sufficient output must be installed in the inverter cabinet (WEB'log max. 3.5 W, i'checker max. 1 W)
- The RS485 devices are connected to the RS485 bus via an RS485 bus board

8.1.6 Diehl AKO Platinum inverter

Platinum 2100 S to Platinum 4601 S

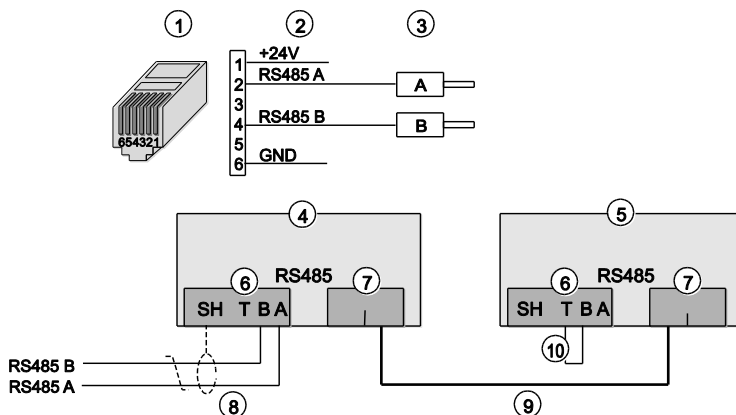


Fig. 30: Diehl AKO Platinum 2100 S... with Connect Universal RS

- | | |
|------------------------------------|-------------------------------|
| (1) RJ12 connector (WEB'log) | (6) Terminal block RS485 |
| (2) PIN assignment (Connect cable) | (7) Double socket RJ45, RS485 |
| (3) Wire end ferrules (inverter) | (8) Connect Universal RS |
| (4) First and subsequent inverters | (9) Ethernet patch cable |
| (5) Last inverter | (10) Terminating jumper |

- Maximum of 31 inverters and 100 i'checkers per WEB'log
- Terminate the RS485 bus on the last inverter (insert jumper (10) between terminals T and B)

Platinum 100 CS/CTL, 11000/17000/20000, 4300TL, 4800 TL, 5300TL, 6300TL, 7200TL

The RS485 connections are situated inside the inverter on the rear of the display and control unit.

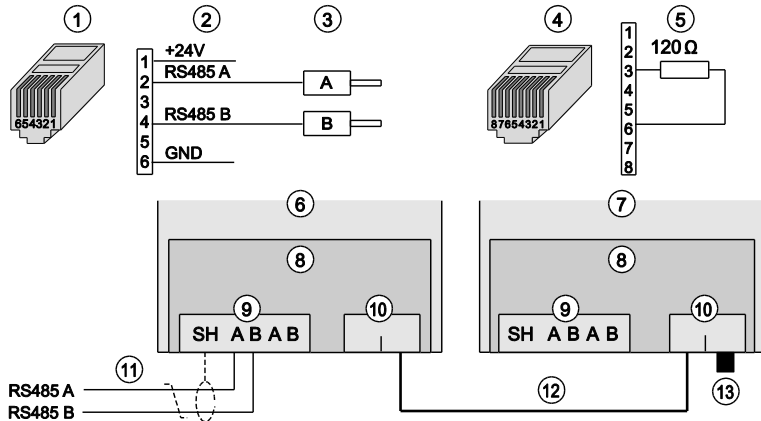


Fig. 31: Diehl AKO Platinum 100 CS/CTL... with Connect Universal RS

- | | |
|------------------------------------|--------------------------------|
| (1) RJ12 connector (WEB'log) | (8) Display and control unit |
| (2) PIN assignment (Connect cable) | (9) Terminal block RS485 |
| (3) Wire end ferrules (inverter) | (10) Double socket RJ45, RS485 |
| (4) RJ45 connection termination | (11) Connect Universal RS |
| (5) Pin assignment, connector | (12) Ethernet patch cable |
| (6) First and subsequent inverters | (13) Connection termination |
| (7) Last inverter | |

- Maximum of 31 inverters and 100 i'checkers per WEB'log
- Do not terminate the RS485 bus on the first or subsequent inverters
- Terminate the RS485 bus on the last inverter (plug terminating connector (13) into RJ45 socket)

8.1.7 Eltek Valere inverter (Modbus)

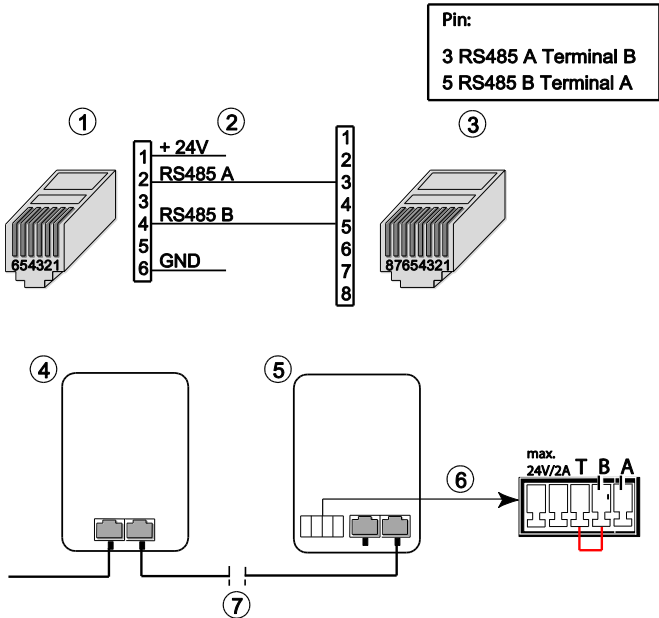


Fig. 32: Connection Eltek Valere inverter

- (1) RJ12 connector (WEB'log), RS485
- (2) Connect Universal RS assignment
- (3) RJ45 connector (inverter)
- (4) First inverter
- (5) Last inverter
- (6) Jumper for terminating resistor between T and B
- (7) Ethernet patch cable

8.1.8 Emerson inverter (Modbus)

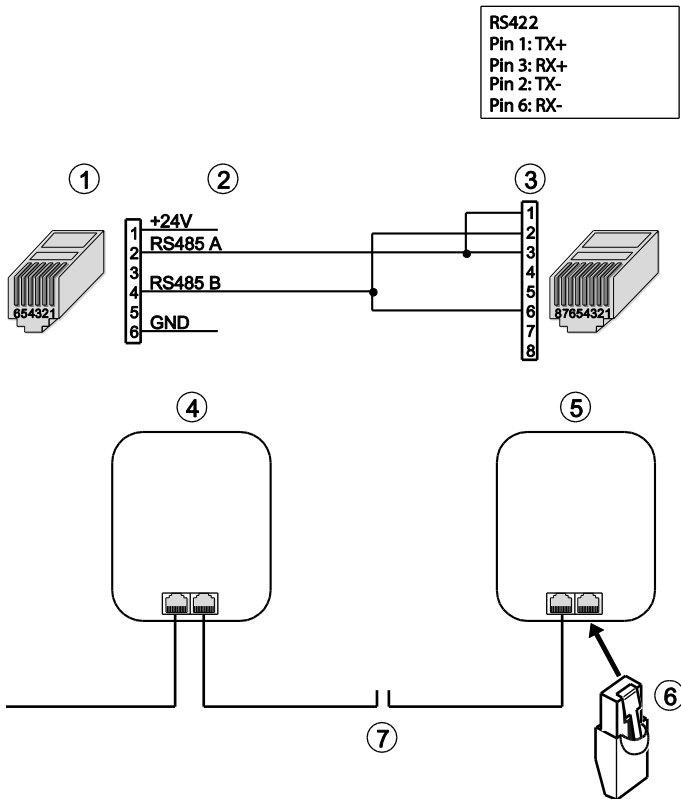


Fig. 33: Connection *Emerson inverter*

- | | |
|-------------------------------------|--------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) Last inverter |
| (2) Connect Universal RS assignment | (6) Terminator |
| (3) RJ45 connector (inverter) | (7) Ethernet patch cable |
| (4) First inverter | |

8.1.9 Fronius inverter

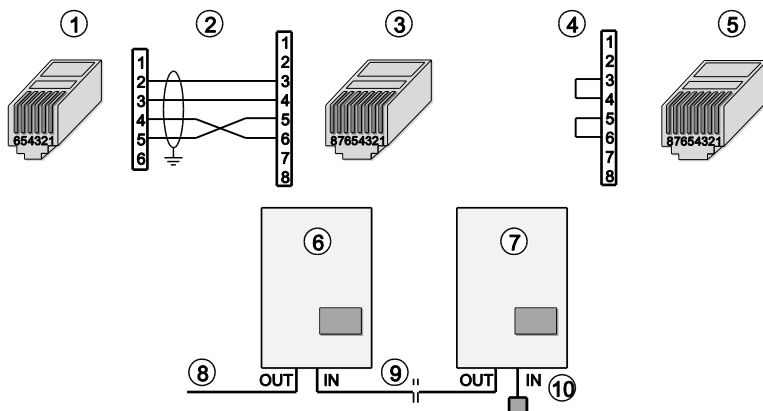
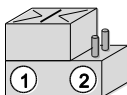


Fig. 34: Fronius inverter with Connect Fronius

- | | |
|-------------------------------------|------------------------------------|
| (1) RJ12 connector (WEB'log), RS422 | (6) First and subsequent inverters |
| (2) PIN assignment (Connect cable) | (7) Last inverter |
| (3) RJ45 connector (inverter) | (8) Connect Fronius |
| (4) Terminator pin assignment | (9) Ethernet patch cable |
| (5) RJ45 terminator | (10) Terminator for last inverter |

- Maximum of 31 inverters and 100 i'checkers per WEB'log
- Install the Com Card network card in the inverter (see inverter documentation)
- Set the bus address in the inverter (see inverter documentation)
- Connect the cable shield to the ground terminal at the WEB'log end
- Set the protective relay switch to the "RS422" position. The relay switch must be switched only when de-energized



- | | |
|--------------------|-------|
| (1) Left position | RS422 |
| (2) Right position | RS232 |

Note: Modbus auxiliary devices cannot be connected.

8.1.10 Gefran inverter

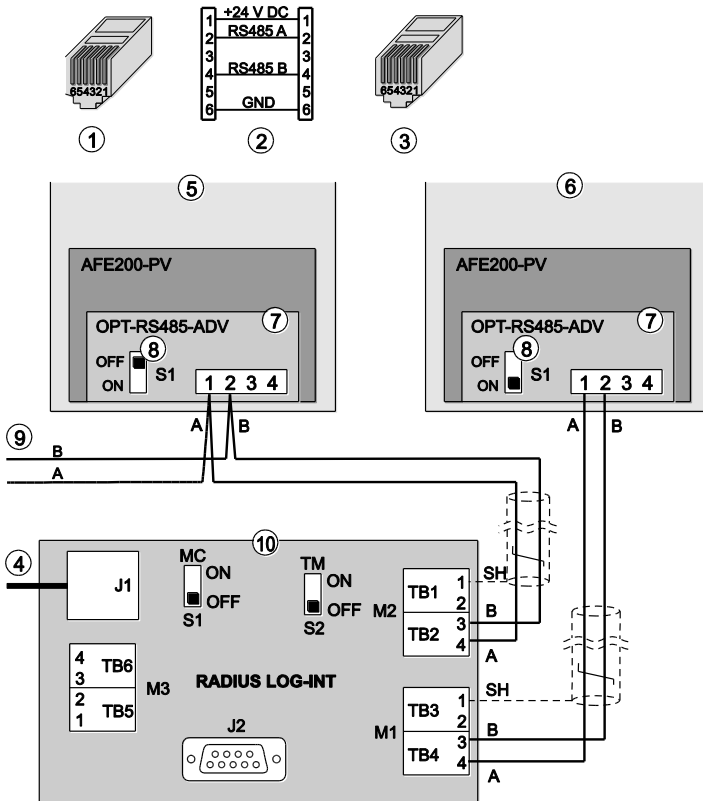


Fig. 35: Gefran inverter

- | | |
|-------------------------------------|--------------------------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) Subsequent inverters / string boxes |
| (2) Pin assignment, bus cable | (7) RS485 interface card |
| (3) RJ12 connector (interface card) | (8) Bus termination switch |
| (4) RJ12 patch cable to the WEB'log | (9) Bus connection, next inverter or Gefran string box |
| (5) inverter | (10) Interface converter |

- Maximum of 31 inverters and 19 Gefran string boxes per WEB'log

The data logger is connected to inverters and/or active string boxes (IBX COM) via the interface converter “RADIUS LOG-INT”.

The interface converter RADIUS LOG-INT includes an RS485 hub and distributes the RS485 bus to the connected bus devices.

Inverter connection

- Terminal block M1 can be used to connect a single inverter. The bus segment is terminated internally
- Switch off the RS485 bus termination in the inverter (S1 to “OFF”)
- Terminal block M2 can be used to connect a number of inverters
- Terminate the RS485 bus on the interface converter (S2 to “ON”)
- Terminate the RS485 bus on the last inverter (S2 to “ON”)

Current sensor connection

Gefran offers an active string box (IBX com) which includes the current sensors and a shared RS485 interface.

A number of active string boxes can be connected in sequence to an RS485 bus segment.

- On the first and subsequent active string boxes, switch the bus termination off (JP7 to left)
- On the last active string box, switch the bus termination on (JP7 to right)

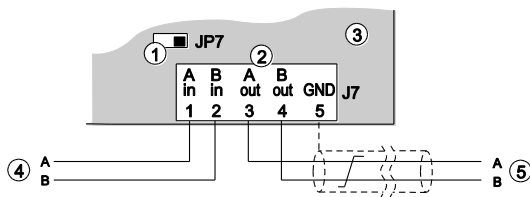


Fig. 36: RS485 interface to the active string box (IBX com)

- | | |
|-------------------------------------------------|------------------------------------|
| (1) Bus termination JP7 | (4) RS485 bus from previous device |
| (2) Terminal block J5, string box | (5) RS485 bus to following device |
| (3) Control module in active string box IBX com | |

8.1.11 Ingeteam inverter

Connection to RS485 Com card

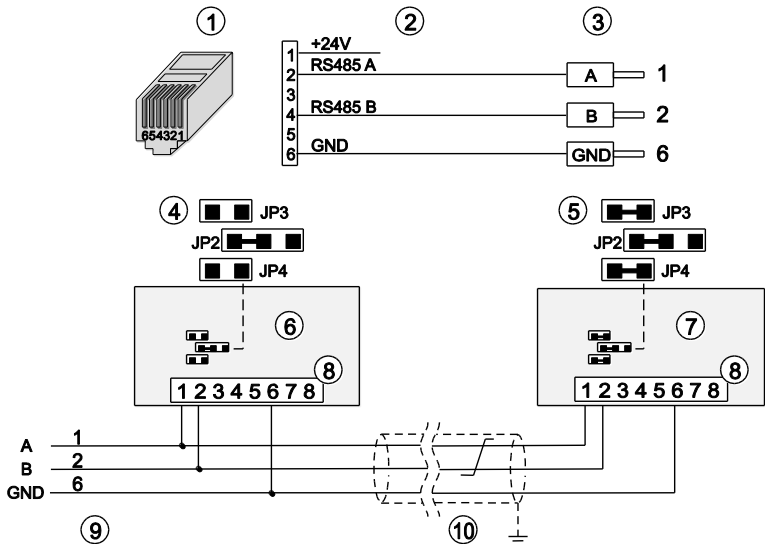


Fig. 37: Ingeteam inverter with Connect Universal RS, Terminal

- | | |
|-----------------------------------------------|------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) First and subsequent inverters |
| (2) Pin assignment, Connect cable | (7) Last inverter |
| (3) Wire end ferrules (inverter) | (8) RS485 Com card terminal block |
| (4) Jumpers on first and subsequent inverters | (9) Connect cable from WEB'log |
| (5) Jumpers on last inverter | (10) Bus cable |

- Maximum of 31 inverters and 100 i'checkers per WEB'log
- Terminate RS485 bus on last bus device with jumper JP3 / JP4

Connection to the inverter connector

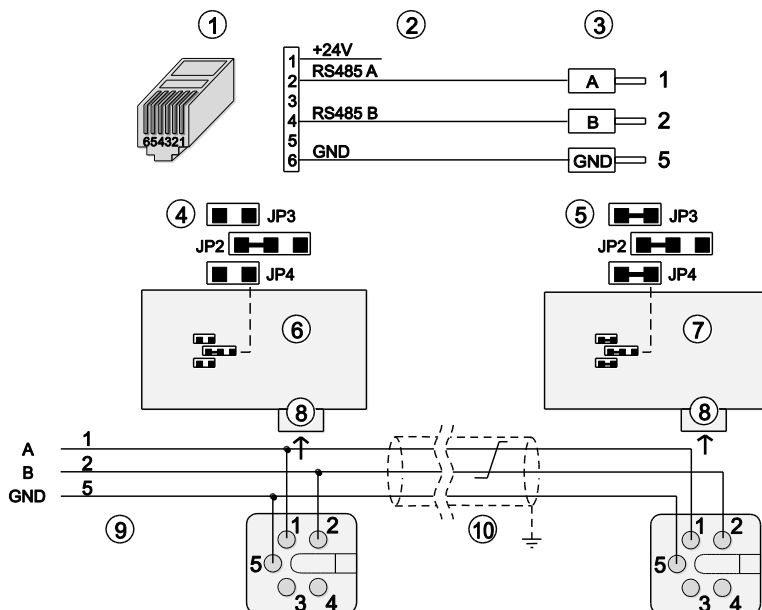


Fig. 38: Ingeteam inverter with Connect Universal RS, inverter connector

- | | |
|-----------------------------------------------|------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) First and subsequent inverters |
| (2) PIN / connector assignment | (7) Last inverter |
| (3) Wire end ferrules (inverter) | (8) Inverter housing connector |
| (4) Jumpers on first and subsequent inverters | (9) Connect cable from WEB'log |
| (5) Jumpers on last inverter | (10) Bus cable |

- Maximum of 31 inverters and 100 i'checkers per WEB'log
- Terminate RS485 bus on last bus device with jumper JP3 / JP4

8.1.12 Jema inverter

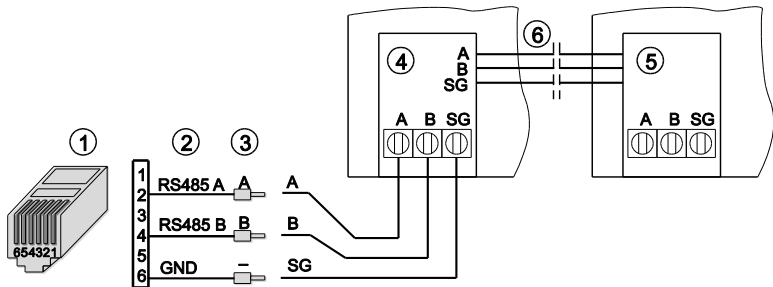


Fig. 39: Jema inverter with Connect Universal RS

- | | |
|-------------------------------------|----------------------|
| (1) RJ12 connector (WEB'log), RS485 | (4) First inverter |
| (2) PIN / connector assignment | (5) Last inverter |
| (3) Wire end ferrules (inverter) | (6) Internal SPS bus |

- Maximum of 31 inverters and 100 i'checkers per WEB'log

8.1.13 Kaco inverter

Powador 2500xi - 5000xi

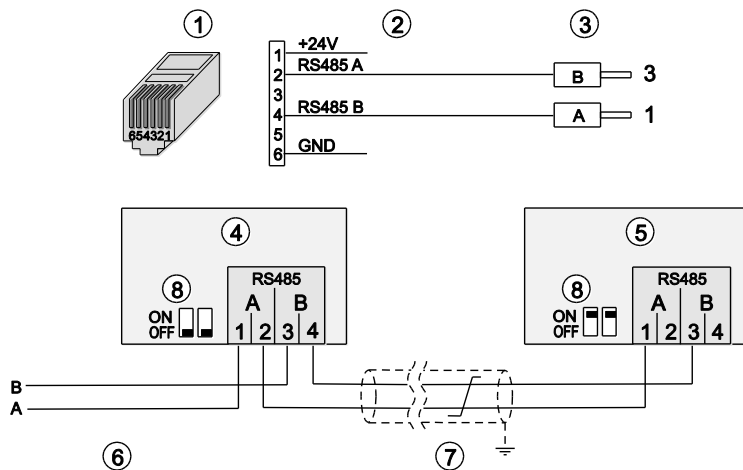


Fig. 40: Kaco inverter with Connect Kaco

- | | |
|-------------------------------------|-----------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) Last inverter |
| (2) PIN / connector assignment | (6) Connect Universal RS |
| (3) Wire end ferrule (inverter) | (7) Bus cable |
| (4) First and subsequent inverters | (8) Slide switch termination (2x) |

- Maximum of 31 inverters per WEB'log
- Do not terminate the RS485 bus on the first or subsequent inverters (both slide switches (8) to "OFF" position)
- Terminate the RS485 bus on the last inverter (both slide switches (8) to "ON" position)

Powador 25000xi - 33000xi

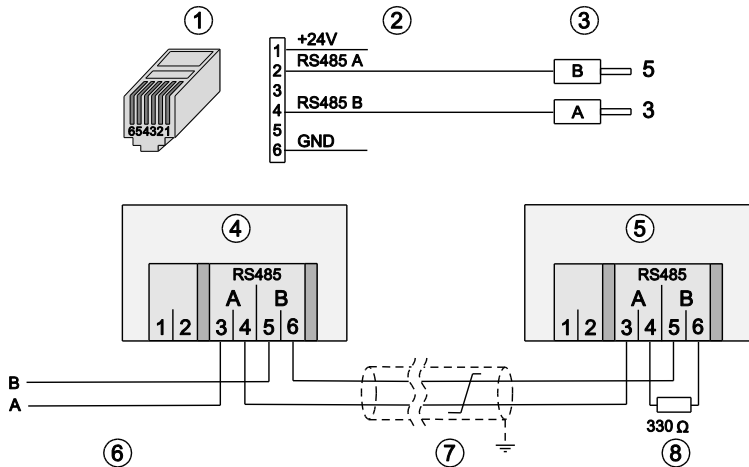


Fig. 41: Kaco inverter with Connect Kaco

- | | |
|-------------------------------------|--------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) Last inverter |
| (2) PIN / connector assignment | (6) Connect Universal RS |
| (3) Wire end ferrule (inverter) | (7) Bus cable |
| (4) First and subsequent inverters | (8) Terminating resistor |

- Maximum of 31 inverters per WEB'log
- Do not terminate the RS485 bus on the first or subsequent inverters (do not activate terminating resistor (8) of inverter)
- Terminate RS485 bus on last inverter (activate terminating resistor (8) of inverter, see inverter manual for a description)

8.1.14 Kostal inverter

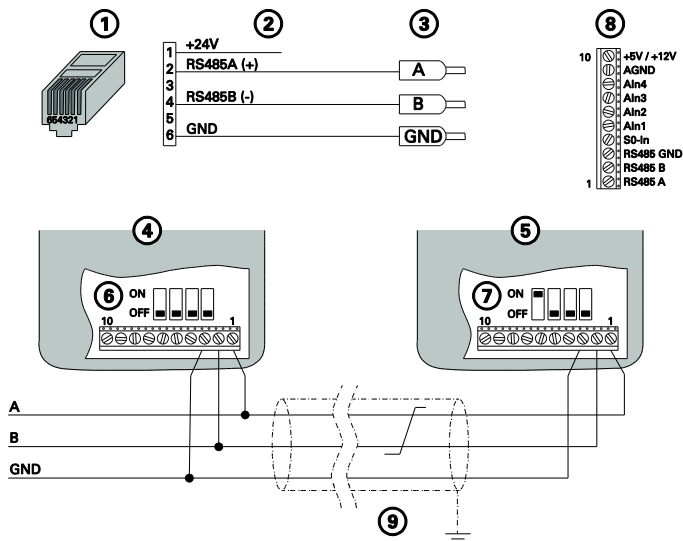


Fig. 42: KOSTAL string inverter via RS485

- | | |
|-------------------------------------|---------------------------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) DIP switch communication board I |
| (2) PIN / connector assignment | (7) DIP switch communication board I |
| (3) Wire end ferrule (inverter) | (8) Terminal assignment on communication board I and II |
| (4) First and subsequent inverters | (9) Bus cable |
| (5) Last inverter | |

- Connect the cable shield to the ground terminal at the WEB'log end
- Set the bus address in the user menu of the inverter (see inverter documentation)
- Do not terminate the RS485 bus on the first or subsequent inverters (DIP switch (6) to "OFF" position). For inverters with communication board II, termination is set in the user menu (see inverter documentation)
- Terminate the RS485 bus on the last inverter using the DIP switch (DIP switch (6) to "OFF" position). For inverters with communication board II, termination is set in the user menu (see inverter documentation)

Note: The +24V connection of the WEB'log may not be applied to the inverter terminals.

8.1.15 Mastervolt inverter

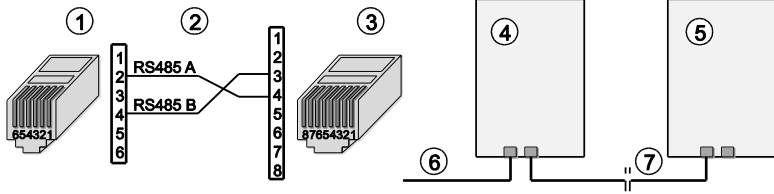


Fig. 43: Mastervolt inverter with Connect Mastervolt

- | | |
|-------------------------------------|--------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) Last inverter |
| (2) PIN assignment | (6) Connect Mastervolt |
| (3) RJ45 connector (inverter) | (7) Ethernet patch cable |
| (4) First and subsequent inverters | |

- Maximum of 31 inverters and 100 i'checkers per WEB'log

Note: According to Mastervolt, no bus termination is required.

8.1.16 Power One inverter

String inverter

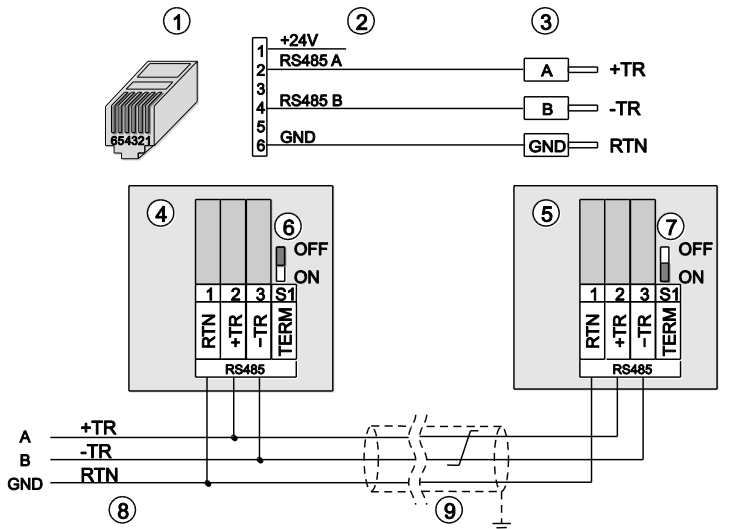


Fig. 44: Power One string inverter with Connect Universal RS

- | | |
|-------------------------------------|------------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) S1 on first and subsequent inverters |
| (2) PIN / connector assignment | (7) S1 on last inverter |
| (3) Wire end ferrules (inverter) | (8) Connect cable from WEB'log |
| (4) First and subsequent inverters | (9) Bus cable |
| (5) Last inverter | |

- Maximum of 31 inverters per WEB'log
- Set the inverter bus address (see inverter documentation)
- Set switch S1 to OFF on the first and subsequent inverters
- On the last inverter, set switch S1 to ON

8.1.17 Refusol inverter

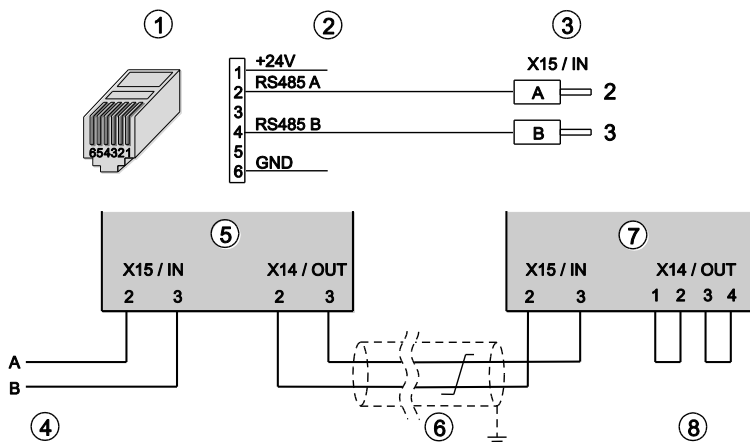


Fig. 46: Refusol inverter with Connect Universal RS

- | | |
|-------------------------------------|---------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) First inverter |
| (2) Connect Universal RS assignment | (6) Bus cable |
| (3) Wire end ferrules (inverter) | (7) Last inverter |
| (4) Connect cable from WEB'log | (8) Bus termination (2 jumpers) |

- Maximum of 31 inverters per WEB'log
- To connect the inverters, use the supplied connectors
- After the last inverter, terminate the RS485 bus with two wire jumpers
- Make the following setting on each inverter:
 - Bus address:
 - Baud rate: 57,600 Bd
 - RS485 parity: "On"
 - protocol: 3

Note: The settings only become active once the inverter is switched off and on again.

8.1.18 Riello inverter

RS485 Interface Card (four-wire)

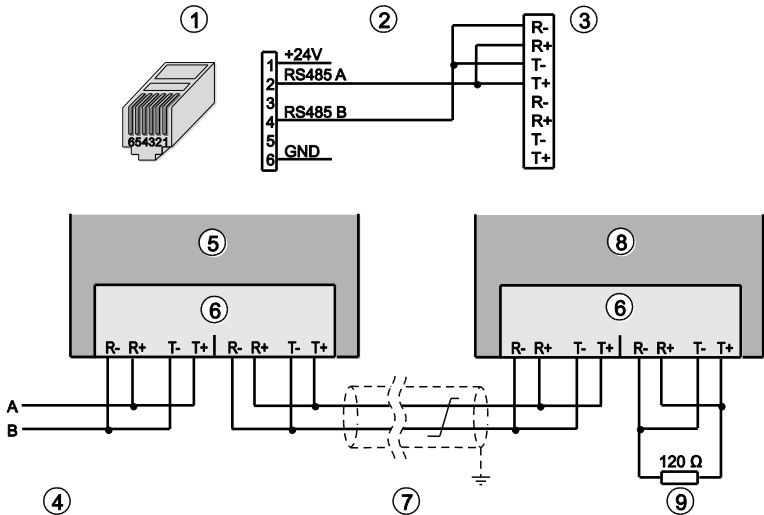


Fig. 47: Riello inverter

- | | |
|-------------------------------------|--------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) RS485 Interface Card |
| (2) Connecting cable | (7) Bus cable |
| (3) Input, first inverter | (8) Last inverter |
| (4) Connecting cable from WEB'log | (9) Bus termination |
| (5) First inverter | |

- Maximum of 31 inverters per WEB'log
- On the Interface Card, connect the Receive side (Rx) and Transmit side (Tx) with jumpers in each case
- After the last inverter, terminate the RS485 bus with a 120 ohm resistor

RS485 Interface Card (two-wire)

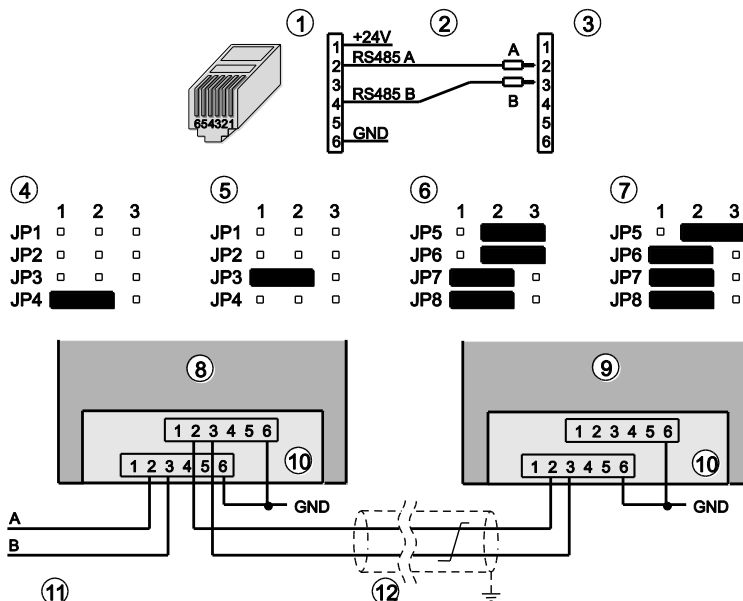


Fig. 48: Riello inverter, Connect Universal RS

- (1) RJ12 connector (WEB'log), RS485
- (2) Connect Universal RS assignment
- (3) RS485 Interface Card terminal block
- (4) RS485 Interface Card in slot 1
- (5) RS485 Interface Card in slot 2
- (6) Bus termination off
- (7) Bus termination on
- (8) First / subsequent inverters
- (9) Last inverter
- (10) RS485 Interface Card
- (11) Connect Universal RS
- (12) Bus cable

- Maximum of 31 inverters per WEB'log
- Use a shielded twisted-pair cable (STP) as the intermediate cable
- On some central inverters:
Depending on the planned installation position of the RS485 Interface Card (slot 1 or 2), set jumper 3 or 4. (Jumpers 1 ... 4 are not present on all models)
- On the first and subsequent inverters:
Deactivate RS485 bus termination using jumper 6
- On the last inverter:
Activate RS485 bus termination using jumper 6

8.1.19 Santerno inverter (Modbus)

Sunway M Plus

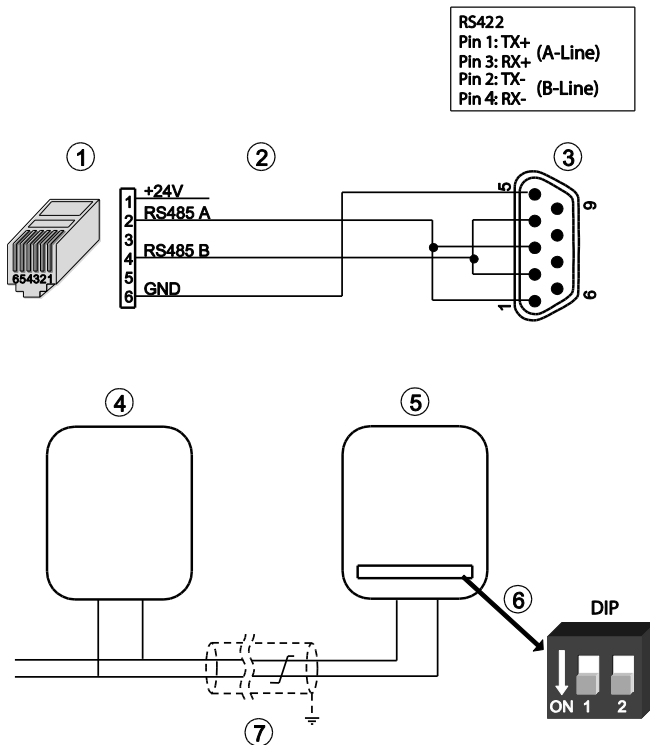


Fig. 49: Connection with Santerno inverter Sunway M Plus

- (1) RJ12 connector (WEB'log), RS485
- (2) Connect Universal RS assignment
- (3) DB9 connector (inverter)
- (4) First inverter
- (5) Last inverter
- (6) Terminating resistor DIP switch for last inverter
- (7) Bus cable

Sunway M-XS 2200- 3000- 3800

I

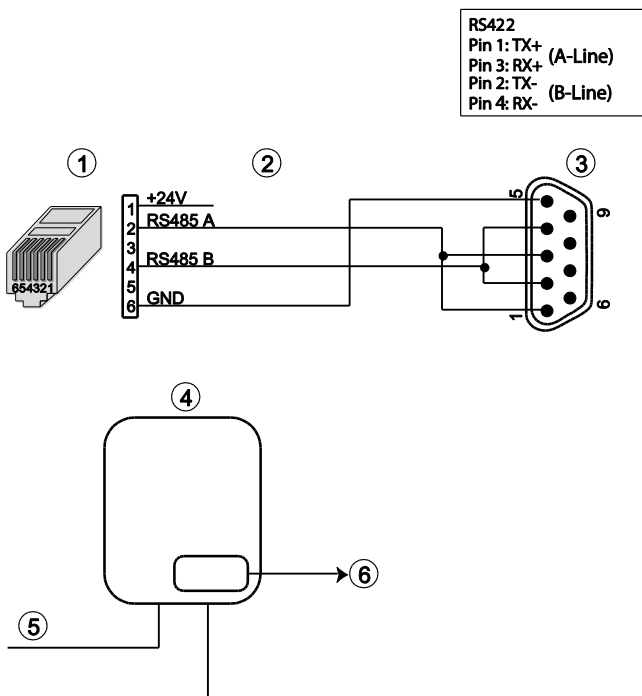


Fig. 50: Connection with Sunway M-XS 2200, 3000 and 3800

- (1) RJ12 connector (WEB'log), RS485
- (2) Connect Universal RS assignment
- (3) DB9 connector (inverter)
- (4) Inverters
- (5) Bus cable
- (6) Integrated terminating resistor

Sunway M-XS 4300- 5000- 6000- 7500

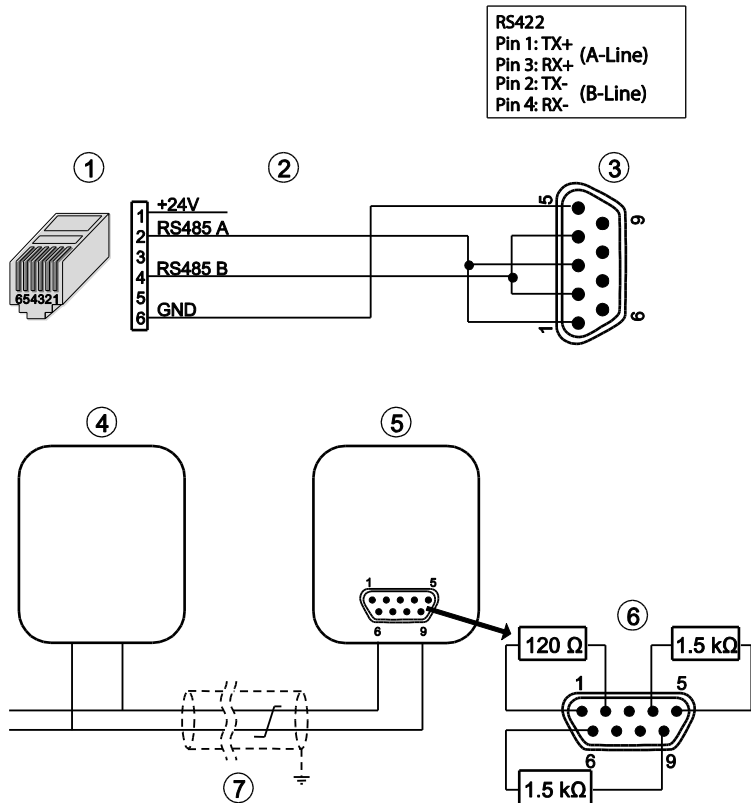


Fig. 51: Connection with Sunway M-XS 4300, 5000, 6000 and 7500

- | | |
|-------------------------------------|-----------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) Last inverter |
| (2) Connect Universal RS assignment | (6) External terminating resistor |
| (3) DB9 connector (inverter) | (7) Bus cable |
| (4) First inverter | |

Sunway TG and TE

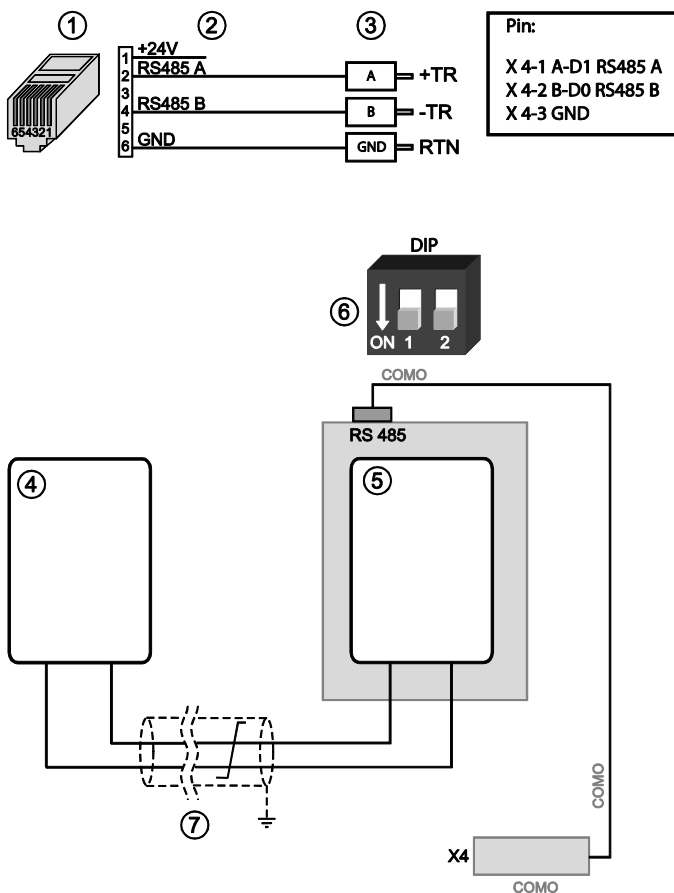


Fig. 52: Connection with Sunway TG and TE

- | | |
|---------------------------------------------------|------------------------------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) Last inverter |
| (2) Connect Universal RS assignment | (6) DIP switch on the control board (terminating resistor) |
| (3) Terminals on the terminal strip X4 (inverter) | (7) Bus cable |
| (4) First inverter | |

8.1.20 Satcon inverter (Modbus)

Connection via RS485

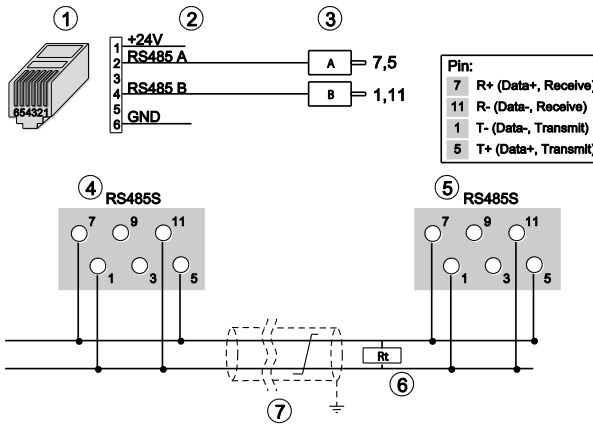


Fig. 53: Connection Satcon inverter

- | | |
|-------------------------------------|--------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) Last inverter |
| (2) Connect Universal RS assignment | (6) Terminating resistor |
| (3) Wire end ferrules (inverter) | (7) Bus cable |
| (4) First inverter | |

Connection via Ethernet

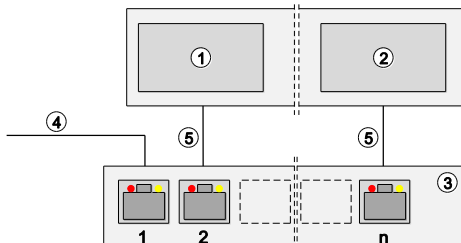


Fig. 54: Connection via Ethernet with Satcon inverter

- | | |
|------------------------------------|--------------------------|
| (1) First and subsequent inverters | (4) WEB'log connection |
| (2) Last inverter | (5) Ethernet patch cable |
| (3) Switch or router | |

- Communication via Ethernet
- The WEB'log and the inverter must be in the same subnet (net mask)
- The WEB'log requires an FTP connection (ports 20 and 21) to the Internet

8.1.21 Siemens PVM inverter

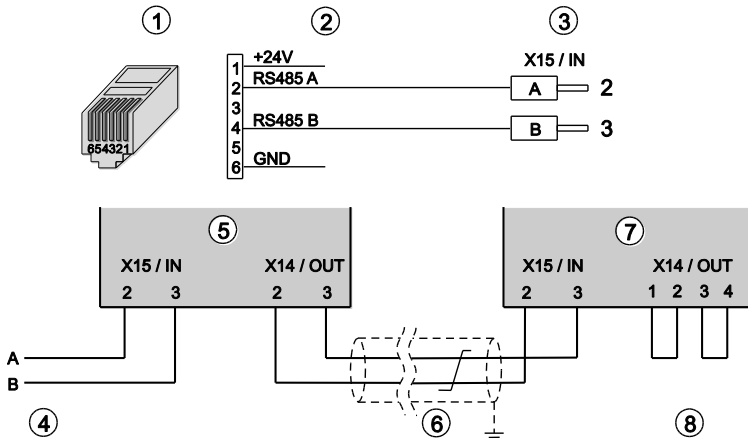


Fig. 55: Siemens PVM inverter with Connect Universal RS

- | | |
|-------------------------------------|---------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) First inverter |
| (2) Connect Universal RS assignment | (6) Bus cable |
| (3) Input, first inverter | (7) Last inverter |
| (4) Connect cable from WEB'log | (8) Bus termination (2 jumpers) |

- Maximum of 31 inverters per WEB'log
- To connect the inverters, use the supplied connectors
- After the last inverter, terminate the RS485 bus with two wire jumpers (8)
- Make the following setting on each inverter:
 - Bus address
 - Baud rate: 57,600 Bd
 - RS485 parity: "On"
 - protocol: 3

8.1.22 SMA inverter

SMA string inverter piggy back

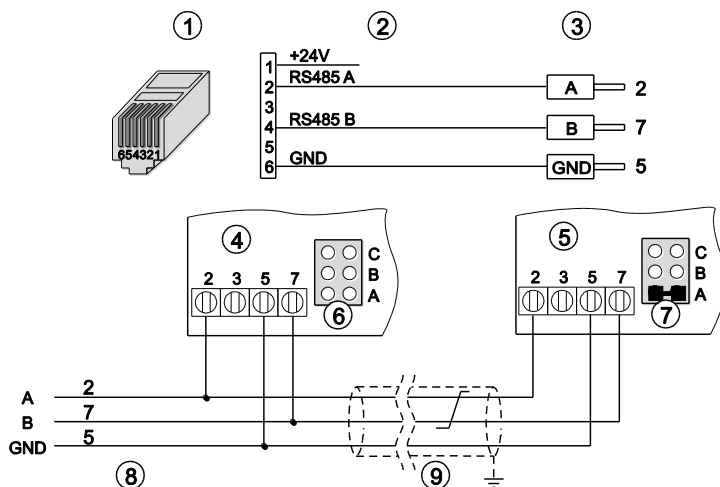


Fig. 56: SMA inverter piggy back with Connect Universal RS

- | | |
|-------------------------------------|----------------------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) Jumper position first and subsequent inverters |
| (2) PIN / connector assignment | (7) Jumper position on last inverter |
| (3) Wire end ferrules (inverter) | (8) Connect cable from WEB'log |
| (4) First and subsequent inverters | (9) Bus cable |
| (5) Last inverter | |

- Maximum of 31 inverters per WEB'log
- Install the RS485 communication interface “piggy-back” on the SMA inverter (according to inverter instructions)
- On the last inverter, set the jumper to “A”

Note: Please use only original piggyback boards from SMA.

SMA string inverter RS485 Quick Module

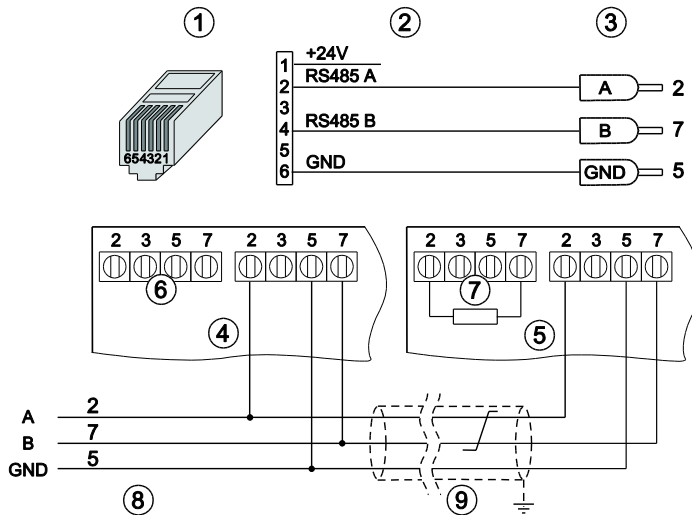


Fig. 57: SMA inverter RS485 Quick Module with Connect Universal RS

- | | |
|------------------------------------|-------------------------------------------------------|
| (1) RJ12 plug (WEB'log), RS485 | (6) Terminal termination without terminating resistor |
| (2) PIN / connector assignment | (7) Terminal termination with terminating resistor |
| (3) Wire end ferrules (inverter) | (8) Connect cable from WEB'log |
| (4) First and subsequent inverters | (9) Bus cable |
| (5) Last inverter | |

- Maximum of 31 inverters per device
- Install the RS485 communication interface "RS485 Quick Module" in the SMA inverter (see inverter documentation)
- Place the terminating resistor on the last inverter

SMA central inverter

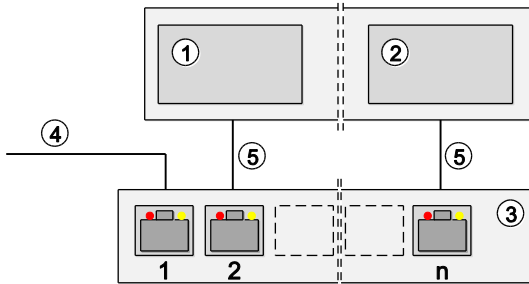


Fig. 58: SMA central inverter with switch or router

- | | |
|------------------------------------|---------------------------------|
| (1) First and subsequent inverters | (4) Ethernet connection WEB'log |
| (2) Last inverter | (5) Ethernet patch cable |
| (3) Switch or router | |

- Maximum of 12 inverters per WEB'log
- Communication between the WEB'log and the inverter is via Ethernet
- WEB'log and inverter must be in the same subnet (net mask)
- The WEB'log requires an FTP connection (ports 20 and 21) to the Internet
- Depending on the size of the system, the network connection must not be interrupted for up to one hour after an inverter scan
- If the inverters are accessed by the Sunny Data Control program from SMA, the WEB'log interrupts data logging and any scan running

8.1.23 SMA central inverter (Modbus)

Connection via Ethernet

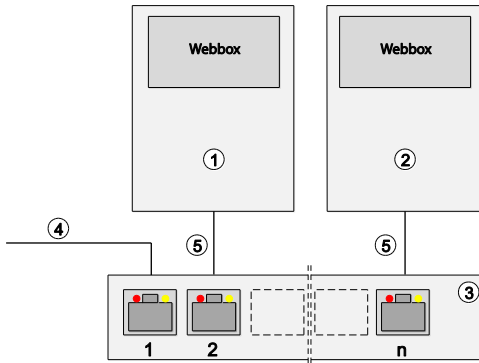


Fig. 59: SMA central inverter Modbus with switch or router

- | | |
|----------------------|---------------------------------|
| (1) First inverter | (4) Ethernet connection WEB'log |
| (2) Other inverters | (5) Ethernet patch cable |
| (3) Switch or router | |

- Communication between the WEB'log and the inverter is via Ethernet
- The WEB'log and the SMA Webbox must be in the same subnet (net mask)
- The SMA Webbox represents a communications gateway to the inverters. It is needed to communicate with the connected inverters and SMUs

Prerequisite for communication with multiple Webbox devices:

- Webbox Firmware Version 1.52 or higher
- The connected bus devices and unit IDs must be listed in the Webbox

The unit IDs (client ID) must be recorded in the Webbox as follows:

- Webbox Gateway = ID1
- Webbox system parameters = ID2
- Inverter = ID3

Note: It is possible for one data logger to communicate with multiple Webbox devices.

8.1.24 Sputnik inverter

S series, MT series

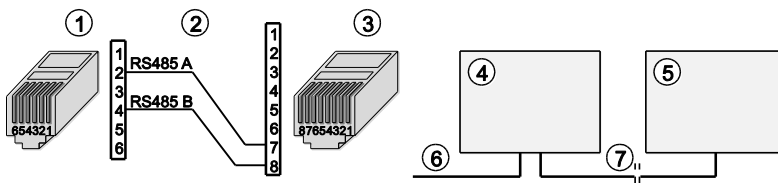


Fig. 60: Sputnik inverter (S Series) with Connect Sputnik S

- | | |
|-------------------------------------|--------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) Last inverter |
| (2) PIN assignment | (6) Connect Sputnik S |
| (3) RJ45 connector (inverter) | (7) Ethernet patch cable |
| (4) First and subsequent inverters | |

- Maximum of 31 inverters and 100 i'checkers per WEB'log
- Set the inverter bus address (see inverter documentation)

C Series

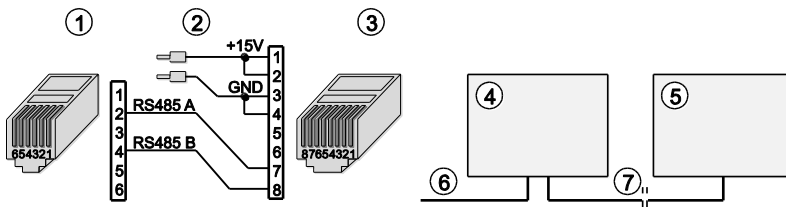


Fig. 61: Sputnik inverter (C Series) with Connect Sputnik

- | | |
|-------------------------------------|--------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) Last inverter |
| (2) PIN assignment | (6) Connect Sputnik |
| (3) RJ45 connector (inverter) | (7) Ethernet patch cable |
| (4) First and subsequent inverters | |

- Maximum of 31 inverters and 100 i'checkers per WEB'log
- Set the inverter bus address (see inverter documentation)

Note: The communication interface of the inverters requires an external power supply (+15 V).

Cx Series, E Series

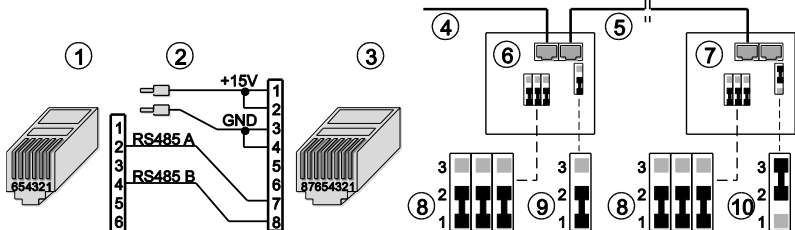


Fig. 62: Sputnik inverter (Cx and E Series) with Connect Sputnik

- | | |
|-------------------------------------|---------------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) First and subsequent inverters |
| (2) PIN assignment | (7) Last inverter |
| (3) RJ45 connector (inverter) | (8) Jumper for RS485 on 1-2 |
| (4) Connect Sputnik | (9) Jumper for terminating resistor on 1-2 |
| (5) Ethernet patch cable | (10) Jumper for terminating resistor on 2-3 |

- Maximum of 31 inverters and 100 i'checkers per WEB'log
- Install the "MaxComm" interface card (see inverter documentation)
- Set the inverter bus address (see inverter documentation)
- Set the jumpers for RS485 and the terminating resistor

Note: The communication interface of the inverters requires an external power supply (+15 V).

8.1.25 StecaGrid 3000 / 3600 / 8000 / 10000

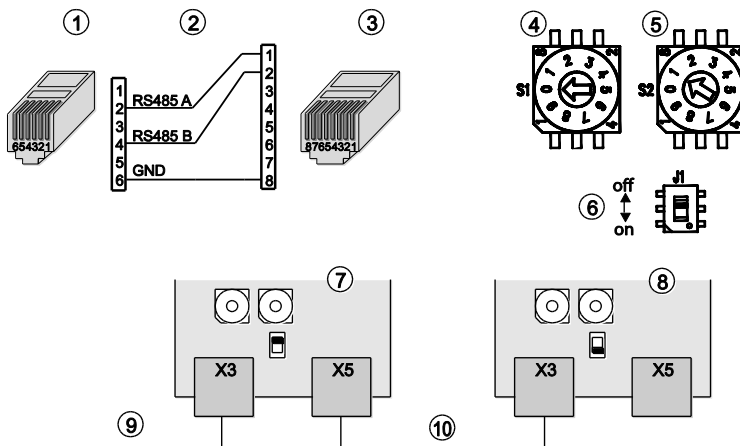


Fig. 63: StecaGrid 8000 / 10000 inverter

- | | |
|-------------------------------------|----------------------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) Bus termination switch (J1) |
| (2) PIN assignment | (7) Interface card, first and subsequent inverters |
| (3) RJ45 connector (inverter) | (8) Interface card, last inverter |
| (4) Address switch, tens (S1) | (9) Bus cable from the WEB'log |
| (5) Address switch, ones (S2) | (10) Ethernet patch cable |

- Maximum of 31 inverters and 100 i'checkers per WEB'log
- Set inverter bus address:
Rotary switches (4) and (5) on the interface card
- Turn off bus termination on the first and subsequent inverters:
Switch (6) to "OFF"
- Turn on bus termination on the last inverter:
Switch (6) to "ON"

8.1.26 Sungrow (Modbus)

Connect RS485 with string inverter

Depending on the bus connector, the connection differs at the inverter (M12 or RJ45).

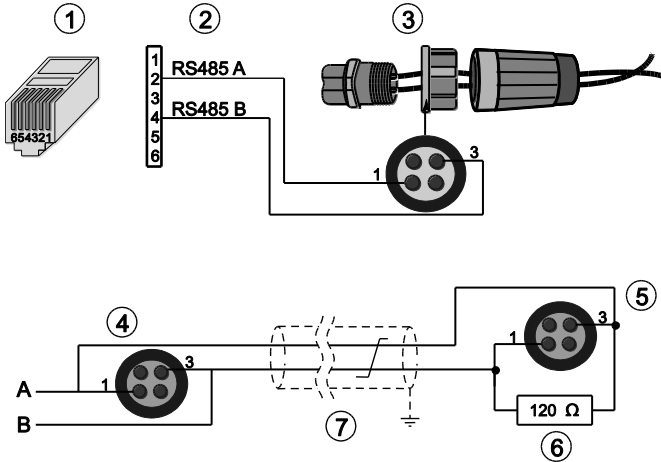


Fig. 64: M12 Connection with Sungrow string inverter

- | | |
|---------------------------------------|-----------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) Socket on last inverter |
| (2) Connect Universal RS assignment | (6) Terminating resistor |
| (3) Direct plug connection (inverter) | (7) Bus cable |
| (4) Socket on first inverter | |

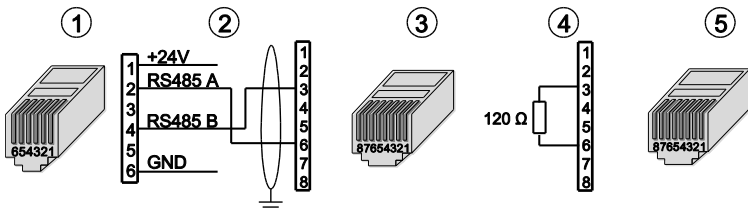


Fig. 65: RJ45 connection for Sungrow string inverter

- | | |
|-------------------------------------|-------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (4) Terminator pin assignment |
| (2) PIN assignment (Connect cable) | (5) RJ45 terminator |
| (3) RJ45 connector (inverter) | |

Connection via Ethernet for Sungrow string and central inverter

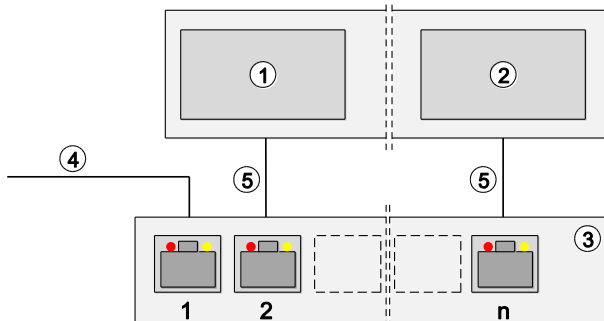


Fig. 66: Connection via Ethernet for Sungrow string and central inverter

- | | |
|------------------------------------|--------------------------|
| (1) First and subsequent inverters | (4) WEB'log connection |
| (2) Last inverter | (5) Ethernet patch cable |
| (3) Switch or router | |

- Communication via Ethernet
- The WEB'log and the inverter must be in the same subnet (net mask)

Connect RS485 with central inverter

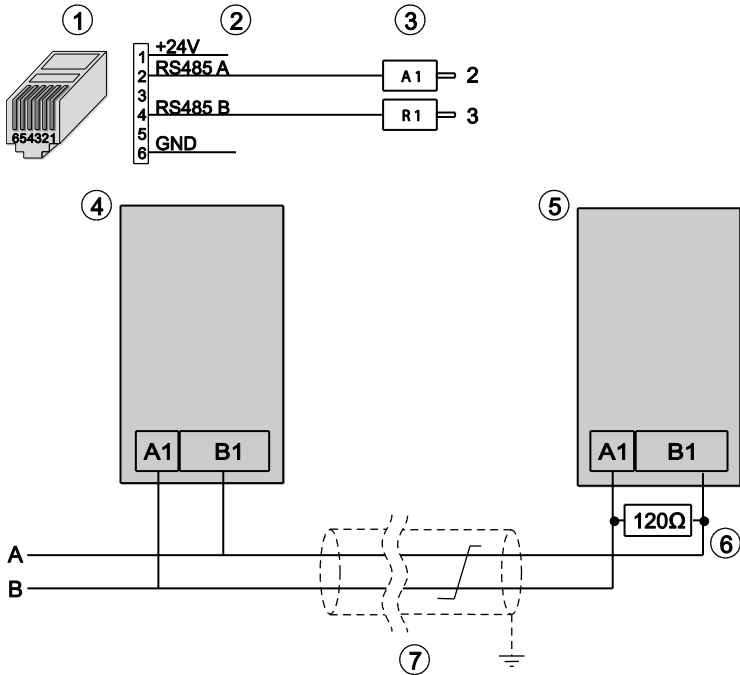


Fig. 67: Connection Sungrow central inverter

- | | |
|-------------------------------------|--------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (5) Last inverter |
| (2) Connect Universal RS assignment | (6) Terminating resistor |
| (3) Wire end ferrules | (7) Bus cable |
| (4) First inverter | |

8.1.27 Sunways inverter

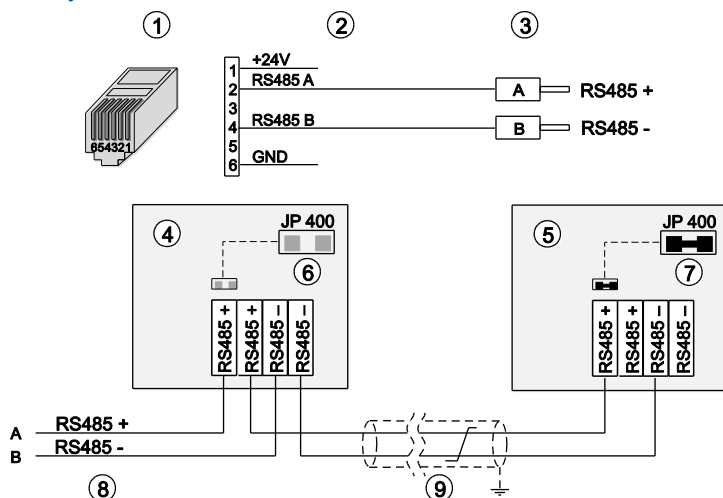


Fig. 68: Connection with Sunways inverter

- | | |
|-------------------------------------|--------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (6) Jumper JP 400 open |
| (2) PIN / connector assignment | (7) Jumper JP 400 closed |
| (3) Wire end ferrules (inverter) | (8) Connect Universal RS |
| (4) First and subsequent inverters | (9) Bus cable |
| (5) Last inverter | |

- Maximum of 99 inverters per WEB'log
- Set the inverter bus address (see inverter documentation)
- Set jumper JP 400 on the last inverter

8.1.28 Xantrex inverter

For models GT100, GT250, GT500, GT630

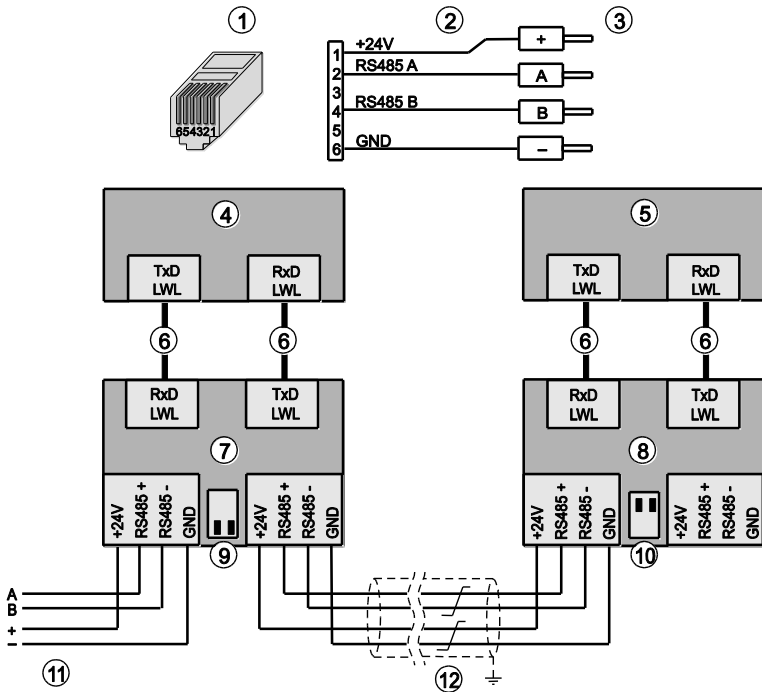


Fig. 69: Xantrex inverter / opto-converter

- | | |
|-------------------------------------|------------------------------------|
| (1) RJ12 connector (WEB'log), RS485 | (7) First opto-converter |
| (2) Connect Universal RS | (8) Last opto-converter |
| (3) First opto-converter input | (9) Terminator switches (both OFF) |
| (4) First and subsequent inverters | (10) Terminator switches (both ON) |
| (5) Last inverter | (11) Connect cable from WEB'log |
| (6) Fiber-optic connecting cables | (12) Bus cable |

- On the first and subsequent inverters:
Switch off the RS485 bus termination (both terminator switches to "OFF")
- On the last inverter:
Turn on the RS485 bus termination (both terminator switches to "ON")

Note: Handle the fiber-optic connecting cables with care!

8.2 Grid feed-in management overview

	WEB'log LIGHT+ 20	WEB'log BASIC 100	WEB'log PRO unlimited
Active power procedures			
P(DI)intern*	X	X	X
P(DI)			X
P(AI)			X
P(Fix)	X	X	X
Reactive power procedures			
cos φ (DI)			X
cos φ (AI)			X
cos φ (Fix)	X	X	X
cos φ (P)			X
cos φ (U)			X
Q(DI)			X
Q(AI)			X
Q(Fix)	X	X	X
Q(U)			X
Q(P) tanφ mix			X
Accessories			
PCU			X
Power quality analyzer			X

* P(DI)internal: Connection of ripple control receiver to the internal digital inputs of the WEB'log.
For other processes, connection is via the PCU.

8.3 Configuration overview

Configuration data for analogue inputs

	Analogue input	Description	Abbreviation*	Unit	Decimal places	Gradient	Offset
Ambient temperature measurement							
PT100 mc compact (0 ... 10V)	Voltage input	Ambient temperature	T_U0	°C	1	10	-30
PT1000 sensor in enclosure (passive)	Temperature input	Ambient temperature	T_U0	°C	1	1	0
PT1000 sensor with integrated converter (0 ... 10V)	Voltage input	Ambient temperature	T_U0	°C	1	10	-50
Hygro Thermosensor mc compact (4... 20mA)	Current input	Ambient temperature	T_U0	°C	1	6.25	-55
Module temperature measurement							
PT100 self-adhesive sensor (0 ... 10V)	Voltage input	Module temperature	T_M0	°C	1	15	-50
PT1000 self-adhesive sensor (passive)	Temperature input	Module temperature	T_M0	°C	1	1	0
SI-420TC-T-K (module temperature) (4... 20mA)	Current input	Module temperature	T_M0	°C	1	5.625	-42.5
SI-12TC-T (module temperature) (0 ... 10V)	Voltage input	Module temperature	T_M0	°C	1	10.869	-20
Irradiance sensors module level							
SI-12TC (solar radiation) (0 ... 10V)	Voltage input	Irradiance on module level	G_M0	W/m ²	0	120	0
SI-12TC-LC (solar radiation) (0 ... 10V)	Voltage input	Irradiance on module level	G_M0	W/m ²	0	120	0
SI-420TC-K (solar radiation) (4... 20mA)	Current input	Irradiance on module level	G_M0	W/m ²	0	75	-300
Global irradiance sensors (pyranometer)							
Pyranometer GSM 10.7 (0 ... 10V)	Voltage input	Irradiance in horizontal plane	G_H0	W/m ²	0	130	0
Pyranometer CMP11 (with converter) (4... 20mA)	Current input	Irradiance in horizontal plane	G_H0	W/m ²	0	100	-400
Wind sensors							
wind speed mc compact (0 ... 10V)	Voltage input	Wind speed	W_V0	m/s	1	5	0
wind direction mc compact (0 ... 10V)	Voltage input	Wind direction	W_R0	°	1	36	0
Humidity sensors							
Hygro Thermosensor mc compact (4... 20mA)	Current input	Surrounding humidity	PHI_U0	% r. F.	0	6.25	-25

*Each abbreviation may be configured only once. If more than one sensor of a given type is used, a consecutive number is used in the abbreviation. G_M0 is only used if there is only one irradiance sensor installed on the module level; otherwise numbering starts from G_M1.

Configuration data for digital inputs

	Digital input	Description	Abbreviation*	Unit	Decimal places	Gradient	Offset
Meter with S0 interface	Pulse input	Feed-in meter total energy	E_Z_EVU	kWh	3	as per meter	60
Submeter with S0 interface	Pulse input	Meter, subsystem x	E_Z_PVx	kWh	3	as per meter	60
Floating contact	Status	Status, input x	S_0x		1	1	1
Ripple control receiver	Status	Status grid feed-in management	S_LMx		1	1	1

Note: x is a placeholder for a consecutive number; E_Z_EVU refers to the feed-in meter of the energy supplier; submeters are named E_Z_PV1, E_Z_PV2, etc.

EG- Konformitätserklärung
EC Declaration of Conformity



Hersteller: meteocontrol GmbH
Manufacturer:

Anschrift: Spichererstrasse 48
Address: D – 86157 Augsburg
Germany

Produkt: WEB'log Light+ 20 / Basic 100 / PRO Unlimited
Product:

Wir erklären, dass die genannten Produkte folgenden Dokumenten und Normen entsprechen:

We declare that the products described above are in compliance with following documents and norms:

Directive 2006/95/EC Electrical Apparatus Low Voltage Directive

ElectroMagnetic Compatibility: ETSI EN 301489-3 (2002-08)

DIN EN 61000-6-1 (2002-08)
DIN EN 61000-6-3 (2002-08)


Emission: DIN EN 55014-1 (2002-09)
DIN EN 55022 (2003-09)

Immission: DIN EN 61000-4-2 (2001-12)
DIN EN 61000-4-3 (2001-12)
DIN EN 61000-4-4 (2002-07)
DIN EN 61000-4-5 (2001-12)
DIN EN 61000-4-6 (2001-12)
DIN EN 61000-4-11 (2001-12)

89/336/EWG-Richtlinie

Augsburg, 07.05.2012

Ort, Datum
place, date


Jens Wening
Name und Unterschrift
name and signature

8.5 RoHS Statement



DECLARATION OF CONFORMITY

2011/65/EU (ROHS)

meteocontrol GmbH declares that all manufactured products are RoHS compliant according to the Directive 2011/65/EU of the European Parliament and the Council from 8 June 2011 on restriction of the use of certain hazardous substances in electrical and electronic appliances. This concerns the following substances whose concentrations must not be exceeded:

Lead	0.1 %
Mercury	0.1 %
Cadmium	0.01 %
Hexavalent chromium	0.1 %
Polybrominated biphenyls (PBB)	0.1 %
Polybrominated diphenyl ethers (PBDE)	0.1 %

Since we are guaranteed RoHS compliance by our suppliers, we, meteocontrol GmbH, can confirm with a clear conscience that all our products comply with the above mentioned Directive.

Augsburg, 15th March 2013

Place, date


Jens Wening
Technical Director

Energy & Weather Services

Niederlassung Moers

Carl-Zeiss-Straße 40^f 47445 Moers

meteocontrol GmbH¹ Spicherer Straße 48, 86157 Augsburg

Geschäftsführung | Martin Schneiderl Robert Pfalscher

Amtsgericht Augsburg | HRB 16 415 | DE 19 45 56 368

Hypovereinsbank Augsburg¹

IBAN DE97 7202 0070 6770 1156 02 BIC HYVEDE33008



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